The Journal of the
American Medical Association

VOL. XXIX. CHICAGO, ILL., AUGUST 28, 1897. No. 9.

ORIGINAL ARTICLES.

MILITARY SURGERY IN GREECE.

BY N. SENN, M.D., PH.D., LL.D.
SURGEON-GENERAL OF ILLINOIS N. G.
CHICAGO.

The war between Greece and Turkey is ended. It was a short and in many respects a remarkable combat. After six or seven conflicts little Greece was conquered by an overpowering foe. In a little more than a month the little kingdom found itself trampled under the feet of a fanatic and greedy conqueror. Fate was against Greece from the beginning of the conflict. The scanty resources of the country made it impossible to maintain an army upon a modern war footing and its citizens, the descendants of the proud and warlike Hellenes, are no longer the equals of their forefathers whose daring exploits and victories have been immortalized in prose and poetry. Centuries of subjugation to foreign power and policies have resulted in a loss of confidence and a diminution in the intrinsic resisting power of the nation that once, under the leadership of great statesmen and warriors, constituted the central power in Southern Europe. When Greece found herself confronted by a war with its envious and bloodthirsty neighbor, she discovered too late the lack of a well disciplined and well equipped army and navy. The first call to arms brought an army into the field of less than 60,000 men. Second-hand guns (Gras) bought from the French government were the arms used. Ammunition was scarce and frequently beyond reach when most needed. According to the testimony of all who were in the field, the Greek soldiers behaved heroically. The quick and complete defeat is evidently attributable more to defective leadership than a want of valor on the part of the troops. The campaign was badly planned by those who were in power and the first defeat resulted in a loss of confidence which was never restored. Turkey rapidly mobilized a well organized and splendidly equipped army of at least 100,000 men along the Grecian border, which at once assumed decidedly aggressive operations. The first battle was fought April 14, the last at Domoko, May 17. The great powers watched the unequal struggle with intense interest, and when it became evident that a complete annihilation of the Greek army was only a matter of a few days, they stepped forward and rendered valuable service by dictating the terms of peace. The Sultan has now to deal with the great powers in adjusting his claims against a conquered and humiliated country. The arms are stacked and the two armies are facing each other almost within speaking distance until the treaty is signed, when they will be withdrawn, and peace, at least for the time being, will be restored. Upon their return the Turks will sing the praises of victory, while the Greeks will bring sorrow and disappointment to their unhappy homes.

During my visit in Patras and Athens I have made faithful attempts to obtain reliable information concerning the treatment and transportation of the wounded on the Greek side. I visited all of the military hospitals and interviewed many military and medical officers and nurses, but the reports received and the statements made were often so conflicting that I find it exceedingly difficult to write upon an authoritative basis. I shall harmonize the facts elicited as much as possible in preparing this report.

Transportation of wounded.—From what I could learn from different sources, the Greek army had few ambulances. The simplest kind of litters were used in conveying the wounded from the fighting line to the dressing station. Two-wheeled carts and donkeys were employed largely in transporting the wounded and sick to the field hospitals. As soon as possible the sick and wounded were conveyed to the nearest landing station and from thence by boat to the hospitals at Athens and Patras. It appears that the wounded bore the rough methods of transportation with great patience and fortitude.

Hospitals.—Germany and Russia sent field-hospitals, which proved of the greatest value during the short campaign. The large military hospitals in Patras and Athens were soon filled and additional room had to be secured for the rapidly increasing number of sick and wounded. In Athens the two military schools and Polytechnicum were transferred into temporary hospitals with accommodations for at least 700 patients. All of the hospitals were found in excellent order, comfortable beds and well-ventilated wards and rooms. The patients receive substantial nutritious food and a liberal allowance of native wine. In one of the hospitals I found twelve wounded Turkish prisoners who received, if anything, better attention than their former enemies. The hospital provided each one of the prisoners with eight cigarettes a day. The prisoners are model patients, but notwithstanding that they are treated with the utmost kindness they are anxious to return to their native land.

Medical officers.—Greece has more doctors to its population than any other country in the world. On an average, two thousand medical students attend the University at Athens annually. Five years is the time required to prepare the student for graduation. Doctors in Greece lead a life of leisure owing to the salubrity of the climate and the overcrowding of the profession. When the war broke out Greece could furnish doctors in abundance, hence the numerous applications of volunteer doctors from the different countries far and near were as a rule declined with thanks. Among the few foreign doctors who did service for the Red Cross Association must be mentioned Abbot, Moffat and Osborne of England. Dr. Abbot performed a number of operations and is highly esteemed by his Greek colleagues. Dr. Skoufas is the Surgeon-General of the Greek army, with the rank

of Colonel. He has served in this capacity for two years and during the campaign just ended was busy in his office daily, from 8 A.M. until 2 to 3 o'clock in the morning. He shows the effect of overwork at the present time. He is a most genial gentleman and did every thing in his power to further my object during my sojourn in Athens. He detailed Lieutenant Schultze, a member of his staff, to conduct Col. Forwood of the U. S. Army, Dr. Fowler of Brooklyn and the writer through all of the military hospitals in the city. Prof. Galvani of the University did service in Thessaly. He is the most persistent and ablest surgeon in Greece. He has charge of the Evangelismos Hospital, where he operates daily at 10 A.M. A number of our party, among them Dr. Lucy Waite of Chicago, and Dr. Southard of San Francisco, witnessed two of his operations, one ovariotomy and an amputation of the leg for advanced tuberculosis of the knee-joint. His conveniences for carrying out antiseptic details are limited and yet his results are said to be remarkable. He is a conscientious and pains-taking operator. Among the other prominent physicians of Athens must be mentioned Dr. Savas, the physician of the Crown Princess, and Dr. Kalopothakés, the first female physician in Greece, both of whom have done excellent service in the medical department of the army. The medical officers in the army are distinguished from the line officers by the color of the velvet on the collar of the uniform, which is a dark purple. The surgeons wear side arms and spurs in the hospitals and streets:

Graduates who desire to enter the army must study an additional year and are then commissioned after passing a satisfactory competitive examination.

Hospital corps.—The Greek army has three thousand soldiers who are instructed to serve as litter-bearers and render the first aid to the wounded, but of these only 300 are non-combatants, the remainder being detailed for special duty as emergencies arise. Before I received this information I was astonished to find the entrance of every military hospital guarded by a soldier wearing the brassard and handling at the same time a Gras gun with bayonet fixed.

Red Cross.—The Red Cross Association of different countries did much to relieve the immediate wants of the sick and wounded. England and Denmark sent quite a number of well-trained nurses who did most efficient work in the field and city hospitals. The nursing in the Polytechnicum is performed exclusively by native female nurses. On my arrival in Athens I met two English nurses who had just returned from the seat of war and who were to return home next day. From them I obtained much valuable information regarding the worth of the Red Cross Association. They were Miss C. E. F. Bull and Miss Isabel Carter of Brighton. I requested them to give me some of their experiences in writing which was very promptly done by Miss Bull. It will be of interest to read in her own words a description of the retreat from Larissa.

"Being in Athens when rumors of war between Turkey and Greece were spread, I offered my services to the Greek Red Cross Society as a volunteer nurse for the front.

"On April 13 the first party of six English Red Cross nurses arrived with Mrs. Chant, and the following morning I received a command from H. R. H. the Crown Princess to go to the palace. There I found the English sisters, and was asked by H. R. H. to accompany herself and three of the sisters to Larissa, it having been arranged that two should remain at the Greek Red Cross hospital at Volo and that one should accompany Mrs. Chant to Crete.

"We arrived at Larissa on Easter Sunday and were taken around to see all the hospitals. At first we found it very difficult to get a footing in any of them, for the Greek doctors did not like the idea of female help. However, we installed ourselves in the theater of the military hospital, which was overcrowded with untrained orderlies, doctors *off duty*, wounded men *waiting* to be attended to; in fact, a crowd of useless individuals falling in each other's way and hindering the work of two or three really good military doctors who were trying to work. At last the value of the English sisters was discovered and by degrees the room was cleared, and we found ourselves hard at work in the operating theater with two clever young surgeons who, we were thankful to find, kept a most strict régime as far as antiseptic treatment was concerned.

"The wounded were brought straight down from the field on mules or in rough wagons. Very little attention could be paid to them in the wards, but when we got a few spare moments we did our best to find out those who were the most severely wounded and had them brought to the theater as soon as possible. Comfort for the poor fellows was out of the question, and it was with the greatest difficulty that a drink of milk could be got for a dying man who was craving for it. Our work was the same from morning till night, and lasted from Easter Sunday until the following Friday night. On the Thursday we had put up a model hospital of twenty beds which had been provided by H. R. H. the Crown Princess. Everything was in readiness for patients who were too badly wounded to be moved on to Volo, and we were to have received them on Saturday morning, but alas! the Turks had only to march in and find everything in readiness for *them!*

"On Friday night we retired at 11 o'clock, tired as usual after our day's work. The only thing we remarked was that the firing being very much nearer, the Turks were not far off; however, that did not make much impression on us, for we had been sleeping amid the boom of the cannon for the last six days.

"At midnight our hostess burst into our room crying out, 'Fly for your lives, the Turks are coming into Larissa!' We did not believe it, and when dressed I went over to the Crown Prince's headquarters to learn the truth. I was told that there was no occasion to fear, and on my return the sisters returned to their beds. We were not left quiet for long, for soon both host and hostess informed us that they were going, and carried out their intention by leaving the house and locking the doors after them; so that in one sense of the word we were prisoners. At about 2 A.M. a wagon under military escort was brought round, and in spite of any wish of our own to remain we were hoisted up on top of our kit bags and taken down to the railway station, which was surrounded by a panic-stricken crowd waiting for the first train to start, and expecting the Turks to swoop down upon them at the first dawn of day.

"All the wounded from the military hospitals were placed in the train, and to our lot fell standing room in a horse box.

"We left Volo on Saturday evening with the wounded on board the *Thessaly*, and arrived in Athens at 1 A.M. on Monday.

"On Tuesday I left for Arta Caravassera with a Greek lady and three English sisters. On the Epirus side we all settled down to steady hard work under a most clever and able surgeon, Mr. Zainie of the Greek Red Cross.

"CATH. E. F. BULL.

"July 26, 1897."

Only a few of the foreign nurses remain at the present time. I found a Danish nurse at the Polytechnicum and Miss Morris of Manchester, England, in one of the military hospitals. The German Red Cross Association was represented by von Reichenbach of Munich, who brought with him a large supply of medicines and dressing materials. Most all of the dressing material in the different hospitals is of German manufacture. Many of the rich Greeks living in foreign countries sent money, nurses and hospital supplies, which did much to alleviate the sufferings of the victims of the late war. A wealthy lady who lives in Marseilles endowed and maintained a large ward in one of the temporary military hospitals in Athens. The impression prevails on this side that the Turks did not respect the Red Cross, that the wounded prisoners were often tortured and mutilated, especially in the interior of Thessaly, where their conduct could not be watched by representatives of foreign countries. On the other hand, it is asserted that the Greek insur-

gents abused the privileges of the Red Cross, which angered the Turks, who in turn resorted to revenge by ignoring the Red Cross protection.

Turkish projectiles.—The Turko-Grecian war was characterized by an immense waste of ammunition. The wounds on the Greek side show evidences that the firing was done at great distances. It is related that as a rule the shooting commenced as soon as the enemy came into view. Capt. Dorst of the U. S. Army tells of a little incident which shows how reckless the troops were in the use of ammunition. The Turkish commander sent out about twelve cavalrymen as scouts to determine the position and strength of the enemy. As soon as the men came into view one of the Greek soldiers more than a mile distant opened fire, and in less than a minute firing was heard all along the line at a safe distance from the Turks. The scouts had no difficulty in reporting to their commander the exact location and probable strength of the enemy without coming within reach of the Greek guns. According to all accounts the marksmanship on both sides was exceedingly poor. The Greeks used the Gras gun with a forty-five caliber bullet of lead as the projectile. The Turks used the Martini single breech-loading rifle with a bullet of the same caliber and material. A single Turkish brigade was armed with the Mauser gun of small caliber and jacketed bullets. The Greek military surgeons say that many of the wounds which they saw were small and presented all the appearances of having been inflicted with a projectile of small caliber. All of the bullets which I saw in the military hospitals of Athens were large bullets of lead, evidently the ammunition for the Martini rifle. Miss Morris, the English nurse, informed me that she saw two bullets of small caliber metal-jacketed removed in the field hospitals. In both instances the bullet was removed from a flesh wound of the leg. In neither case was the bullet depressed. It is evident that the injuries were received at a great distance from the enemy or that the force of the bullets was diminished by striking a medium between the contending forces. I saw a number of injuries inflicted by the contents of exploding shells. In one instance the missile was a small round bullet of lead of about thirty-two caliber.

The Greek soldier.—The Greek people are almost proverbial for their honesty, modesty and simplicity of habits. The Greek laborer is generally industrious, strongly attached to his family and anxious to provide for his children a good education equal, if not superior, to the peasantry of any of the other countries in Europe. Theft and premeditated murder are almost unknown. Murder is not infrequent but when committed it is the result of a quarrel, a sudden excitement of passion. Drunkenness does not exist in Greece. Old and young, rich and poor drink a moderate amount of native wine, but the favorite national drinks are coffee and water. The cafetiers and watervenders do a thriving business in restaurants and public places. Cigarette smoking is common, but the use of tobacco in any other form is exceptional. The temperate eating and drinking in Greece has created a typical race.

The ordinary Greek is below our average size without an ounce of superfluous fat, muscular and well calculated to do excellent service in a short active campaign. There can be no question that the excellent results which have followed the often imperfect treatment of the wounded during the late war are largely due to the unvitiated, vigorous constitutions of the patients. The uniform and equipment of the Greek soldier are of the simplest and cheapest kind. All efforts at display are lacking.

Woman soldiers.—Three Greek women have become famous during the war just ended. Conspicuous among them is Katarina, who joined the insurgents with her brother, did brave work, was wounded and was brought to one of the field-hospitals for treatment. The illustration shows her upon the cot in the hospital surrounded by nurses. Another woman did similar service with her brother. A third woman carried water to the wounded in the firing line, received several wounds, one of which made amputation of the arm necessary. She died eventually from the effects of the injuries.

THE GREEK SOLDIER.

First dressing.—The many wonderful recoveries from serious gunshot injuries which came under my own observation seem to prove that great pains were taken to prevent infection on the field and later in the hospitals. A representative of the staff of the Surgeon-General informed me that the wounds received early attention. The instructions were to shave the injured part, rub thoroughly with a solution of corrosive sublimate, dust the wound with iodoform and dress with antiseptic gauze. Wire splints were used mostly for immobilizing fractured extremities. In the hospitals plaster-of-paris was used to some extent for the same purpose. Diagnosis tags were not used, consequently many primary dressings were

removed unnecessarily, and I have no doubt in some instances to the detriment of the patient. All the primary dressings were applied by the military surgeons; the hospital corps were not expected to take an important part in this work, serving simply as assistants to the surgeons. Elastic constriction and antiseptic tamponade for the purpose of arresting hemorrhage on the field appear to have had only a limited application. One of the nurses whom I met expressed her belief that many lives could have been saved if more attention had been paid to this part of first aid to the wounded.

Operations.—Chloroform was used exclusively as an anesthetic without a single death that could have been attributed to this source. A number of amputations were made in the field-hospitals, but few if any primary resections. Secondary hemorrhage appears to have the been very infrequent, undoubtedly owing to the aseptic conditions of most wounds. More or less rigid antiseptic precautions were always carried out, which explains the rapid handling of most of the operative wounds. The instrument supply was simple and obtained almost exclusively of French manufacturers.

Bullet wounds and results of treatment.—I found it impossible to ascertain even approximate data concerning the number of killed and wounded on either side. The statements made by different persons are so at variance that it is impossible at the present time to estimate the loss of the Greek army. A lieutenant of the Greek army had ready figures claiming that the Greeks killed and wounded 50,000 Turks, while the Greek loss was 15,000. From the observations made in the different hospitals it is more than probable that the number of wounded on the Greek side did not exceed 3,000. Many of these wounds were slight and either did not disable the soldiers or they recovered from the injuries in a few days and returned to their regiments for duty. In no instance was a primary laparotomy performed for penetrating wounds of the abdomen. Dr. Socrate Sp. Tsakona, Prof. Galvani's assistant, informed me that he saw in the Evangelismos Hospital two patients recover from penetrating wounds of the abdomen. In both instances the bullet passed through the abdominal cavity at or above the level of the umbilicus in an antero-posterior direction, passing through the body. In one of the military hospitals I saw a patient fully convalescent from a gunshot injury which implicated the cavity of the chest and liver. Bile escaped through the anterior opening for a number of days; no operation; rapid recovery under expectant treatment. Cases of erysipelas were few and mild. In gunshot fractures of the extremeties progressive phlegmonous inflammation occasionally set in, necessitating extensive drainage or amputation. The Surgeon-General's office had no record of any cases of pyemia. Death caused by infection resulted from progressive sepsis. Field and hospital practice did not show a single case of hospital gangrene. Many of the large lead bullets obtained by extraction or amputation were greatly depressed. I will now give a brief account of some of the cases of

KATARINA, THE GREEK AMAZON.

gunshot injuries which I had an opportunity to examine in the different military hospitals for the purpose of showing what modern surgery has done in the way of saving life and lessening suffering of those engaged in warfare, thus greatly mitigating the remote horrors of the battlefield. Antiseptic surgery can not claim all the good results which followed the treatment of the wounded during the last war, as after the battle of Bordino in 1812, long before antiseptic surgery was known and practiced, comparatively few cases became infected. The good results in part at least are due to the favorable climatic influences and the excellent constitutional condition of the injured.

Marseilles Hospital.—This one of the temporary military hospitals has received its name in honor of a wealthy lady of Marseilles who endowed it so liberally for the present purpose. It is the Polytechnic school, and as soon as all the patients are disposed of will again become an educational institution. The nursing in this hospital has been done principally by a number of Danish sisters from Copenhagen, whose services have proved most acceptable to the authorities and patients. Of 100 patients admitted into this hospital suffering from gunshot wounds, only one died. At present about fifteen wounded soldiers remain, all of them on the way to recovery. The medical cases are made up of malaria and two typhoid fever patients.

MILITARY HOSPITAL AT ATHENS.

Tratiotikon nosocomion.—This is the regular military hospital, erected and used for the exclusive use of sick and wounded soldiers. It is sixty years old and has a capacity of 500 beds. It is built on the barrack system and is well lighted and ventilated. It is asserted that in this hospital three patients recovered without laparotomy who were admitted with perforating gunshot wound of the adbomen. The fatal cases of this kind of injury probably never reached their ultimate destination. There can be but little doubt that a number of cases of perforating gunshot wound of the abdomen recovered without operative intervention, which only goes to prove what the writer demonstrated years ago experimentally that not all perforating gunshot wounds of the abdominal cavity are complicated by visceral injuries of sufficient severity to require abdominal section, or to become the immediate cause of death. The nursing in this hospital is done by soldiers and a few English nurses. The operating room is small, but is supplied with all the essential equipments and materials for aseptic work. All of the operations are performed by the regular military surgeons.

Case 1.—Gunshot wound of the head. The bullet entered above the orbit and passed out of the skull in the parietal region on the same side. No operative treatment. Healing of the wounds of entrance and exit by primary intention. No focal symptoms at any time. Patient fully convalescent.

Case 2.—Gunshot wound of forearm. No fracture of the bones. A German surgeon attempted to find and extract the bullet with negative result. A long scar marks the line of incision. Slight suppuration. Wound now nearly healed. Patient walking about with the forearm supported in a sling.

Case 3.—Bullet wound at the base of right thigh; wound of entrance near the border of the sartorius muscle, wound of exit near gluteal crease. Healing by primary intention.

Case 4.—Wound of right knee joint, received in Epirus. The bullet fractured the internal condyle of the femur, opened the knee joint and was removed by an incision over the outer aspect of the joint. Aseptic healing of the wound with fair degree of motion of the joint. Considerable thickening of the capsule of the joint remains.

Case 5.—Gunshot fracture of leg, with extensive comminution of fibula. Wound received during the first week of the war. Healing by secondary intention and slow formation of callus.

Case 6.—Bullet wound of base of neck. The bullet passed transversely through the soft tissues of the neck, behind the vertebral column and probably caused a fracture of one or more of the spinous processes. The special symptoms due to concussion which followed the injury have now disappeared and were probably caused by concussion of the cord. Healing of the wound without suppuration.

Case 7.—Bullet wounds of chest. Three wounds of entrance over the anterior and upper aspect of the chest. One of the bullets passed through the chest on the left side of the sternum, point of exit over the scapula on the same side. The other two wounds were inflicted by the contents of a bursting shell. The size of the scars indicate that the missiles were less than 38 caliber in size. No attempt was made to locate and remove these bullets. Free hemoptysis immediately after the injury. The patient recovered without any grave complications setting in.

Case 8.—Comminuted gunshot fracture of tibia. Many fragments of bone were removed soon after the injury was received,

leaving a large bone defect. Wound healed; no union and but slight callus production. An operation for pseudo-arthrosis will become necessary in the near future.

Case 9.—Gunshot wound of chest with fracture of spinous processes of one or more dorsal vertebræ. Track made by bullet transverse, about the junction of the middle with the upper third of the dorsal portion of the spine. Pleural cavity not opened. Wound of entrance on one side of the spine, incision made for the extraction of the bullet on the other side on the same level. Spinal symptoms were well marked immediately after the injury was received and are disappearing rapidly. Wound healed without suppuration.

Case 10.—Gunshot wound of knee joint with extensive comminution of internal tuberosity of tibia. Patient a captain in the Greek army. First dressing applied fifteen hours after the injury was received, redressed on the sixth day. Bullet passed through the joint and escaped between the head of the fibula and the external condyle of the femur. Injury inflicted during the beginning of the war. Slight suppuration. Wound now healed; capsule of joint and para-articular tissues remain somewhat swollen and indurated. Considerable impairment of motion. No operative treatment.

Case 11.—Gunshot injury of leg. Patient a lieutenant in the Greek army. Bullet passed from before backward through the leg a few inches below the knee joint, between the tibia and fibula, without fracturing either of the bones. Primary healing of the wound without much functional impairment.

Case 12.—Gunshot wound of the shoulder joint. Wound of entrance two inches below the acromion process. The bullet passed through the head of the humerus and the shoulder joint and was removed in the field hospital at a point two inches below the middle of the clavicle. Conservative treatment. Healing of wound without suppuration. No anchylosis and no swelling of joint. Humerus at the seat of injury considerably enlarged by callus formation. Patient is able to raise arm at a right angle to the body.

Hospital Evangelismos.—This is the best hospital in Athens and furnishes accommodation for 150 patients. The surgical wards are in charge of Professor Galvani, who performs on an average 350 capital operations annually. During the war and at the present time this institution has been used largely in receiving and caring for sick and wounded soldiers. The care of the sick is in the hands of native female nurses. These nurses are devoted workers but lack a thorough training. My attention was called to a number of very interesting gunshot injuries involving different parts of the body.

Case 13.—Gunshot wound of knee joint. The bullet perforated the external condyle of the femur and passed out over the minor aspect of the joint. Course of active treatment. Moderate swelling of joint; no suppuration. The wound healed by primary intention. Recovery with fair action of joint.

Case 14.—Injury of ankle joint produced by the bursting of a shell. Slight infection, healing of the wound by granulation. Joint remains considerably swollen and somewhat tender to pressure. Motion of joint limited.

Case 15.—Bullet wound of soft tissues of the leg. Healing by primary intention.

Case 16.—Similar wound. Healing without suppuration. In both instances the bullet passed through the limb without producing any injury to the bones.

Case 17.—Cretan, gunshot wound of shoulder joint. Bullet passed through head of humerus and joint, point of exit below coracoid process. Fistulous opening remains, through which a limited amount of pus passes daily. Anchylosis not complete. Considerable atrophy of deltoid muscle which may be due to nerve injury.

Case 18.—Gunshot wound of chest. Bullet not extracted; injury followed by empyema. Free drainage without rib resection. Injured side of chest contracted; respiratory movements greatly diminished. Patient is pale and emaciated and shows the effects of prolonged suppuration.

Case 19.—Gunshot fracture of thigh. Injury received four months ago. Wound healed; bone united by massive callus; limb considerably shortened and femur curved.

Case 20.—Gunshot wound of chest and abdomen. Bullet entered dorsal side of chest on level with eighth rib four inches from median line, took a downward and forward course and escaped below costal arch an inch below cartilage of seventh rib. No operation. Bile escaped through anterior perforation for a number of days. Wound healed by primary intention. No serious inflammatory complications. Patient is now fully convalescent.

Case 21.—Gunshot wound of ankle joint. Moderate suppurative synovitis followed the injury. Wound of entrance granulating. Joint considerably swollen; heel retracted; motion greatly impaired.

Case 22.—Gunshot wound of patella opening knee joint. Secondary suturing of patellar fragments with satisfactory result. Motion of knee joint greatly impaired, which in part is due to the swelling and induration of the soft structures which still remain. Suturing material, silkworm gut; operator, Professor Galvani.

Dase 23.—Gunshot wound of heel. Extraction of bullet in the field hospital. Suppurative; suppurating fistula leading down to denuded os calcis remains.

Case 24.—Perforating gunshot wound of the abdomen. Recovery without operation.

Case 25.—Gunshot wound of abdomen. Recovery without operation. Cases previously mentioned. Both of these cases entered the hospital ten days after the injury was received.

Case 26.—Gunshot fracture of both bones of the forearm. Bullet and loose fragments of bone removed in the field hospital. No union and no callus formation. Wound healed.

Case 27.—Gunshot fracture of the humerus. Bullet passed through the arm near the middle. Nerves escaped injury. Healing by primary intention. No splints. Fixation by bandaging arm to the side of the chest with forearm fixed and supported by the same bandage. Union by bony callus with good functional result.

Military academy transformed into temporary hospital.—This institution could readily accommodate 300 to 400 patients. It is well adapted for hospital use. Twelve English nurses were employed during the war in caring for the sick and wounded, assisted by soldiers. At present only one nurse remains and the number of patients has been reduced to less than two hundred.

Case 28.—Gunshot wound of thigh. Infection. Secondary amputation. Osteomyelitis of the bone made it necessary to perform a second operation, which consisted in enucleating the bone. Wound still suppurating and healing slowly by granulation.

Case 29.—Gunshot wound of clavicle and scapula. Clavicle united by a massive callus. Bullet passed from before backward, above the large vessels and nerves. Motion of arm greatly impaired.

Hypaxiomatikon Hospital.—This is another temporary military hospital. It is an old military school which was converted into a hospital soon after the breaking out of the war. More than five hundred patients have been treated here. It gives accommodation for 110 patients and is fairly well equipped for the present purpose. It is now used for convalescents almost exclusively. Of the present 110 patients 50 are recovering from injuries received during the war.

Camp and hospital diseases.—The prevailing disease among the soldiers in the field and in the hospitals is malaria. The average soldier is perfectly familiar with the use of quinin, which is the only drug used in the treatment of this affection. Typhoid fever and pneumonia have claimed a number of victims. As a rule typhoid fever pursues a comparatively mild course and is not treated by any of the aggressive methods. Complications are watched for and promptly treated when they appear.

Athens, July 28, 1897.

Rectoscopy.—Finding that metal tubes 15 to 40 cm. in length could be safely introduced into the rectum, S. v. Federoff has invented a rectoscope on the principles of the esophagoscope, but separate from the light, 2 to 2.5 cm. in diameter, with a rubber obturator, the patient in the lithotomy or knee-elbow position. Inserted gently, it can be worked up into the flexura sigmoidea as far as the mesosigmoideum will allow, which varies in different persons. Photographs of the rectum can be taken through this rectoscope, and carcinoma can be differentiated with it alone, while it is also valuable for other obvious purposes.—*Cbl. f. Chir.*, July 31, from *Chirurguija*, 5.

THE "SCHOTT TREATMENT" OF CARDIAC DISEASE.

Read in the Section on Practice of Medicine, at the Forty-eighth Annual Meeting of the American Medical Association at Philadelphia, Pa., June 1-4, 1897.

BY C. N. B. CAMAC, M.D.

FIRST ASSISTANT RESIDENT PHYSICIAN JOHNS HOPKINS HOSPITAL, BALTIMORE, MD.

The "Schott treatment" for chronic heart disease, although well established in Germany and England, is so little known in America that it warrants a word of explanation before going on to the description of the cases treated by this method at the Johns Hopkins Hospital.

Nauheim first came to the notice of Europeans in 1834. It was not until 1860 that Dr. Beneke of Marburg considered scientifically the value of the medicated bath treatment. From 1859 to 1870 his articles on the waters of Nauheim made their appearance in the *Berliner klinische Wochenschrift;* from 1870 to 1890 August and Theodore Schott and J. Groedel were frequent contributors on this subject to this journal. August Schott died, but his brother continued the work and published one of the first articles to appear in English print in 1892. Although this article appeared in the *Lancet* it received but little attention, and it was not until 1894 that, upon the publication of an article by W. Bezley Thorne, in the *Lancet*, the treatment came to be discussed in medical circles. Shortly after the appearance of this article, the same author published a systematic explanation of the treatment and how it could be artificially employed. Since the appearance of this book the literature in England and Germany has been crowded with articles on the subject, as may be seen by the extensive bibliography.

Nauheim is situated in the Grand Duchy of Hesse, three-quarters of an hour's ride by train from Frankfurt and two hours' from Homburg, at the eastern slope of the Johannesburg, the last spur of the Taunus mountains. The springs are divided into two classes: those suitable for drinking and those for bathing. The principal ingredients of the waters are sodium chlorid and calcium chlorid, various salts of iron, and an abundance of carbonic acid. Their natural temperature ranges between 82 and 95 degrees F. Spring No. 12 rises some fifty to fifty-six feet above the surface, forming a most beautiful fountain, the waters with their rich supply of carbonic acid gas falling into a seething mass in the basin below.

These waters are led to various houses in which are the bath rooms. Although the waters vary naturally in strength, they are, nevertheless, altered artificially to suit the requirements of the bather. About the central spring are situated these numerous bath houses with their varying strengths indicated by the numbers 1, 2, 3, 4, 5 and 6. A patient is ordered by his physician to take such a one of these as may be deemed advisable. Learning, therefore, the constituents of these waters and the conditions to which each is applicable, it becomes a mere matter of careful analysis and proper instruction to administer these baths artificially. Fresenius the State chemist at Wiesbaden has given a careful analysis, by following which the artificial baths may be prepared. The baths at the Johns Hopkins Hospital have been conducted upon the basis of these analyses.

It is of interest to inquire first in what way these baths act. That they have been efficacious in the relief of chronic heart disease was made evident before the subject was taken up by the brothers Schott. That there is a diminution in the area of cardiac dulness, that there is a change in the position of the apex beat, was also made evident. There was, therefore, under this treatment some distinct change in the degree of congestion of the internal organs and a gradual reduction of a dilated heart. That there was relief from the dyspnea and distress so commonly associated with chronic heart disease, being established on the one hand; that there was a relief of the congestion of the internal organs, evidenced by the reduction of the area of cardiac dulness and an increase in the amount of urine secreted and a diminution of pleural effusions established on the other hand, the question as to how these changes were brought about came to be actively discussed. Throughout the range of literature on this subject, no satisfactory explanation has as yet been given. While Dr. Schott's view, that the salts held in solution pass by imbibition through the outermost layers of the epidermis and so act upon the terminal nerves of the skin, exerting a reflex action on the internal organs, sounds perhaps satisfactory, yet one looks for an explanation which is less of the nature of an hypothesis. In support of his view he mentions that excessive bathing induces an excitable state of the nervous system, sleeplessness and loss of appetite, but this can hardly be considered as proof that the action of the Nauheim waters on the terminal nerves, is accountable for all the changes which result in the internal organs. Nevertheless the conclusion that all these extensive changes are in reality the result of a reflex action produced by influences upon the terminal nerves it must be admitted, is plausible. Thorne's statement, that there is a dilatation of the muscular arteries, and afterward of those of the skin, thus relieving the congestion of the internal organs, is but a part of the explanation and although he adds another link to the chain he by no means completes the explanation. How is this dilatation brought about? True, Dr. Schott states that the calcium chlorid is the active stimulant to the terminal nerves through imbibition. Dr. Lauder Brunton, in his massage experiments, demonstrates that more blood flows through the massaged part, and that blood pressure first rises and then falls, but that on the conclusion of massage more blood collects in the massaged parts; experiments which were confirmed by Dr. Oliver.

Ludwig has shown that the capacity of the muscles for blood, is equal to the combined capacities of the internal organs and the skin. In these two experiments, we think we find the most satisfactory explanation of the action of both the baths and the exercises; for, if Dr. Lauder Brunton's experiments in massage be correct, and the conclusion of Ludwig be correct, the increased amount of blood in the muscles must indicate a relief of congestion in the internal organs. That there is more blood in the part and necessarily a dilatation of the muscle arteries is proven by increased displacement of the limb. We are yet at a loss to find the link between the action of the salts upon the skin and the increase in the amount of blood in the muscles. If, however, we accept Dr. Schott's explanation of the cutaneous excitation by the gaseous and mineral constituents, followed by a more prolonged stimulation of the sensory nerves produced by a the imbibition of the salts into the superficial layers of the corium, we perhaps, have this missing link in the chain of explanation. To sum up the various theories

which have been advanced, the calcium chlorid of the salt waters is imbibed into the superficial layer of the corium producing a superficial cutaneous excitation first and then a stimulation of the deeper sensory nerves, these in turn leading to a dilatation of the peripheral vessels with a consequent increase of blood in the muscles and the skin, *whose combined capacity far exceeds that of the internal organs*, the result being a relief of the congestion of the latter.

Having thus first reviewed the theories in explanation of the way in which these saline waters and the exercises act, the practical questions as to the treatment present themselves. I shall confine myself solely to the administration of the exercises and artificial baths. The course of baths consists of six different strengths; the first and second consisting of different proportions of calcium chlorid and sodium chlorid; the third, fourth, fifth and sixth contain carbonic acid as well as these salts. By the expression "course" of six baths is not to be understood that every patient is submitted to the whole six strengths. It simply means that according as the patient improves the bath is increased in strength; for example bath No. 1, may be administered for a period of several days, the patient failing to respond to it; No. 2, is given and if there be still no response No. 3, and so on even to the full strength, that is bath No. 6. Frequently it is not necessary to go higher than the fourth bath either because the patient shows distinct improvement with the strength already employed or because there is all absence of improvement and his condition contraindicates further submitting him to the treatment.

Bath No. 1, consists of sodium chlorid 4 pounds; calcium chlorid 6 ounces.

Bath No. 2, sodium chlorid 5 pounds; calcium chlorid 8 ounces.

The following baths have together with these salts carbonic acid which is produced by the action of hydrochloric acid and sodium bicarbonate.

Bath No. 3, consists of sodium chlorid 6 pounds; calcium chlorid 10 ounces; bicarbonate soda 6 ounces; hydrochloric acid 7 ounces.

Bath No. 4, sodium chlorid 7 pounds; calcium chlorid 10 ounces; sodium bicarbonate 8 ounces; hydrochloric acid 12 ounces.

Bath No. 5, sodium chlorid 9 pounds; calcium chlorid 11 ounces; sodium bicarbonate 1 pound; hydrochloric acid 1 pound.

Bath No. 6, sodium chlorid 2 pounds; calcium chlorid 12 ounces; sodium bicarbonate 1 pound; hydrochlorid acid 2 pounds.

These various amounts of salt we have put up in packages and labeled bath No. 1, 2, 3, etc., and any strength of bath can be made up by ordering these packages. The calcium chlorid is best prepared in solution. The above proportions correspond to 40 gallons of water, which is just about enough to entirely immerse the body. The bath is given in the morning unless otherwise deemed advisable.

The following are the rules which have been laid down for the administration of the bath. Most of these rules have been made after perusal of the literature and from instructions obtained from Dr. Schott personally.

The bath should be given on an empty stomach; allow the patient to make as little exertion as possible; assist him in every way. A sheet may be drawn over the tub but not around the patient. Be sure that the entire body is immersed. Keep the finger on the pulse during the entire time the patient is in the bath.

Danger signals.—Cyanosis; dyspnea; apnea; inappreciable pulse. On the appearance of any of these, take the patient out of the bath immediately, put him to bed and keep him as quiet as possible. Friction while in the bath is not necessary, but if the fingers and toes become bluish the extremities may be rubbed slightly toward the trunk. Friction should be cautiously employed; when the patient is out of the tub rub him to a glow; give him a glass of milk or cup of bouillon and allow him to rest for an hour.

Diet.—Small quantity q. 4h. meat, boiled chicken, mutton chops; eggs, two a day; oysters raw or panned; vegetables of all kinds; peas, beans, lettuce; liquids; beef tea, bouillon, cocoa, lemonade, milk. *Note.*—Never give more than 4 ounces of fluid at a time. Should be sipped. *Wine.*—Port, Rhine, sherry, brandy; dram to half ounce.

Note.—Something light (cocoa and toast) should be taken one hour before the bath; something light and hot (bouillon, milk punch and toasted crackers) should be taken directly after the bath. If the heart's action is poor, sherry, brandy or port wine may be given after the bath. Last meal to be taken three hours before retiring.

The exercises which are called by Dr. Schott "Widerstandgymnastik" or resistance gymnastics are slow movements executed by the patients and resisted by the physician or operator. The exertion is the very least that can be employed and should cause no fatigue on the part of the patient. Light, loose clothing should be worn by the patient and he should be instructed to breathe quietly. It is hardly necessary to give full explanation of the exercises here as it demands considerable attention and is more in the order of a drill than of an explanation. It is important however to state that these movements should not be administered without thorough training from one competent to give it. The movements are nineteen in number and involve all the larger muscles of the body. This portion of the treatment we have entrusted to our nurses, who have received thorough instruction and whom we find are better adapted to the administration of the light resistance than are men.

Since November we have had under treatment ten cases. Of these ten we have had four deaths, two have shown no improvement, one has shown improvement only during the treatment and three have shown continued improvement.

No one would claim to cure cases of chronic heart disease; all that one can hope for is to place the heart in a functional condition which in relation to the rest of the organism is the best possible compatible with the lesion which exists. In the three cases which have shown continued improvement the results have been very satisfactory, one might say even striking. Of the four deaths No. 1 was a case of aortic insufficiency; No. 2 of dilatation and arterio-sclerosis; No. 3 of chronic nephritis; No. 4 of mitral stenosis. Although the chronic nephritis case was manifestly inappropriate to the treatment, it was selected for the purpose of noting the action upon the kidneys.

In this case, a young girl whose condition at no time was hopeful, the edema of the genitalia and lower extremitities on admission being so extensive that it was impossible to approximate the legs. The features were almost unrecognizable. Beyond a very

slight response amounting to about 500 c.c., there was no increase in the urine excreted. As an extreme case, therefore, of chronic nephritis this was in no way aided by the treatment. Another case, on the contrary, of chronic interstitial nephritis and tachycardia, the action upon the excretion of urine was most striking. The patient was removed to the isolation ward owing to the unmanageable condition in which she was, following uremia.

The following is a synopsis of the urine record. Record begun December 9.

1. Between December 9 and January 20, *forty-three days.* Urine fell below 900 c.c., in twenty-four hours, *twenty-one times.*

Treatment.—Nitroglycerin, continued throughout period of forty-three days; patassium iodid, tr. digitalis, sol. diuretin, sweat baths, cream tartar water, citrate of lithia, apollinaris.

Condition of patient.—Delirious, requiring forcible restraint.

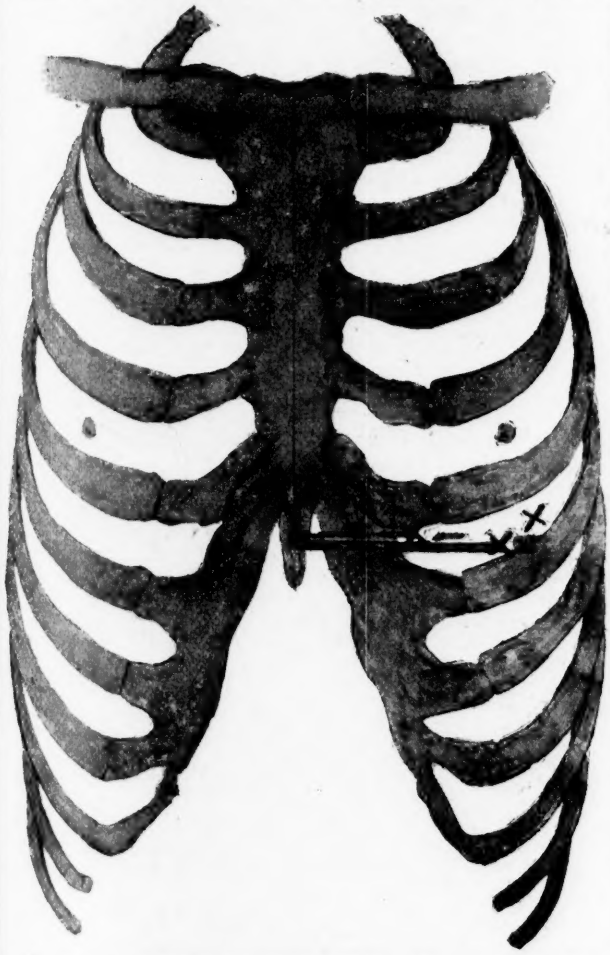


CHART No. 1.—Hunt. Feb. 12. Before bath No. 1, strength No. 1. Point max. imp., 5th space, 13½ cm. from median line; after bath, point max. imp., 5th space, 11 cm. from median line. Feb. 13, no bath given. Point max. imp., 5th space, 10 cm. from median line. Feb. 14, bath No. 2, strength No. 1. Point max. imp. after bath 5th space, 8 cm. from median line. Feb. 15, no bath given. Point max. imp. not located. No signs (physical or post-mortem) of effusion.

2. Between January 20 and March 2, *forty-two* days. Urine fell below 900 c.c., in twenty-four hours, *four times.*

Treatment.—Nitroglycerin, apollinaris, Schott baths, hot baths, continued throughout period of forty-two days; tr. strophanthus, tr. digitalis, strychnia, potassium iodid.

Condition of patient.—Rational; does not sleep well.

3. Between March 2 and 11, *eight days.* Baths were discontinued. Urine fell below 900 c.c., in twenty-four hours, *six times.*

Treatment.—Tr. digitalis, citrate potash, nitroglycerin, apollinaris, sweat bath, pilocarpin.

Condition of patient.—Dyspnea; 280 c.c. urine on March 6; 210 c.c. urine March 9; small irregular pulse.

4. Between March 11 and April 7, *twenty-eight days.* Resisted movements and baths. Urine fell below 900 c.c., in twenty-four hours, *five times*, upon each occasion with an interval of at least three days.

Treatment.—Nitroglycerin, apollinaris, strychnin, Inf. digit.. Schott bath No. 3, resisted movements Nos. 1, 2, 4, 5, 6, 9 and 10.

Condition of patient.—Out on grounds; sleeps well; no dyspnea. Discharged April 7.

This case we considered as receiving benefit only during treatment. The improvement was not lasting.

The second fatal case (the first being the chronic nephritis in the girl first mentioned) was that of a colored man with marked signs of aortic insufficiency, accompanied by the Flint murmur at the apex. This was an extreme case whose condition had become so serious that he was removed to the isolation ward. So far from the median line was the apex beat that it seemed a suitable case upon which to note the effect of

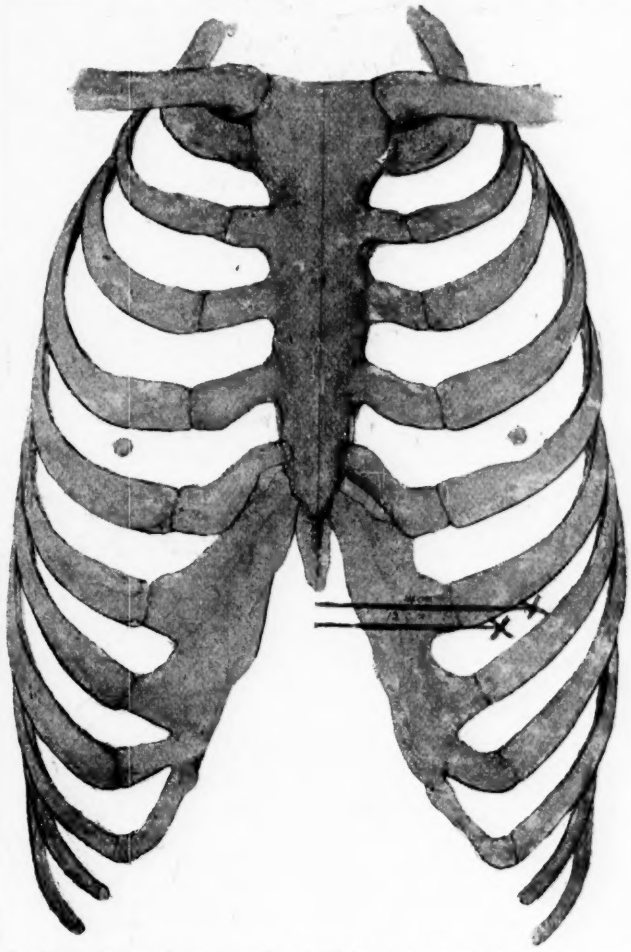


CHART No. 2.—Larber. Before bath No. 1, strength No. 1, point max. imp. 14 cm. from median line. After bath, point max. imp., 12 cm. from median line. Length of time in bath, five minutes.

Charts Nos. 1 and 2 illustrate the *immediate* influence of the baths upon the point max. imp.

the baths. The point of maximum impulse was seen in the fifth space, 13½ cm. from the median line. After the first bath the apex beat was seen in the fifth space 11 cm. from the median line. The day following, the maximum impulse was seen in the fifth space 10 cm. from the median line and on the following day a second bath was given and the apex beat was found in the fifth space 8 cm. from the median line. The patient improved very markedly, became clearer in his head, and was quite manageable. On the 16th, four days after the first bath the patient died suddenly. An effusion at once suggests itself, but there were no signs of such. (Chart No. 1.)

The third fatal case was a private one who showed signs of cardiac dilatation and a moderate degree of thickening of the vessels. This patient was given movements from February 21 to April 4. He was extensively edematous, especially the legs. It was never possible to make very careful examinations of the cardiac outline. The pulse, however, which had been very weak and of small volume. improved very distinctly in the course of the treatment. The edema almost wholly disappeared and the patient from being confined to a chair was able to be up and occasionally to drive. March 29 and 30, he took a drive and slept well. On March 31 he had a very restless night but on April 1 was again able to drive. For this patient this was a very great improvement considering he had

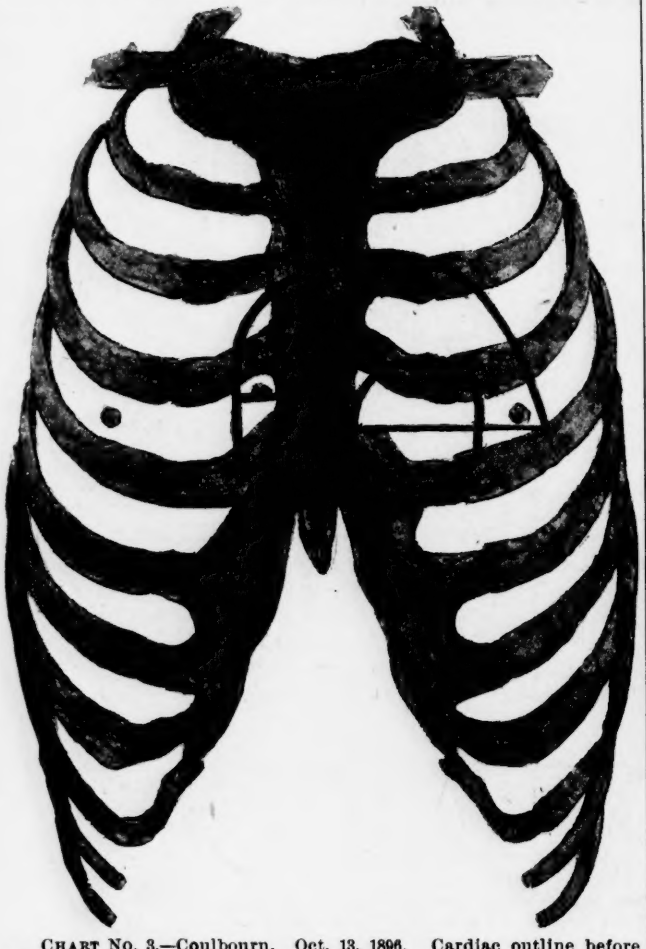


CHART No. 3.—Coulbourn. Oct. 13, 1896. Cardiac outline before bath No. 1, strength No. 1. Right border 2¾ cm. from median line. In bath eight minutes.

spent months in his room. On April 3 he had a very restless night and from this date he steadily declined, dying suddenly on April 7.

The fourth fatal case was one of mitral stenosis. The change in the apex beat was very striking. This man came into the hospital suffering from great dyspnea and distress and cyanosis; under the treatment he was able to be up and about the ward, and on the day before Christmas was so much improved as to go to his home. He was, however, an intemperate fellow and got into a spree on Christmas Eve, during which he fell dead. (Chart No. 2.)

In these four fatal cases are shown the marked influence upon, 1, the position of the apex beat; 2, the increase in the amount of urine in spite of the nephritis in one case; 3, the very marked improvement in the pulse in the case of the cardiac dilatation which was associated also with arterio-sclerosis; 4, the inefficiency of the treatment on a case of extreme nephritis.

The two cases which showed no improvement, one was that of cardiac dilatation, and glycosuria; the other cardiac dilatation with chronic nephritis. Although the area of cardiac dulness was diminished and the pulse tracing, which were taken by Dr. McCrae, assumed a more definite character, the edema never diminished and the patient was discharged practically unimproved (charts 3, 4, 5). We therefore see that in these seven cases so far reported, those in which the kidneys were extensively involved, no improvement resulted. In those cases in which there was nephritis but of a less severe grade the improve-

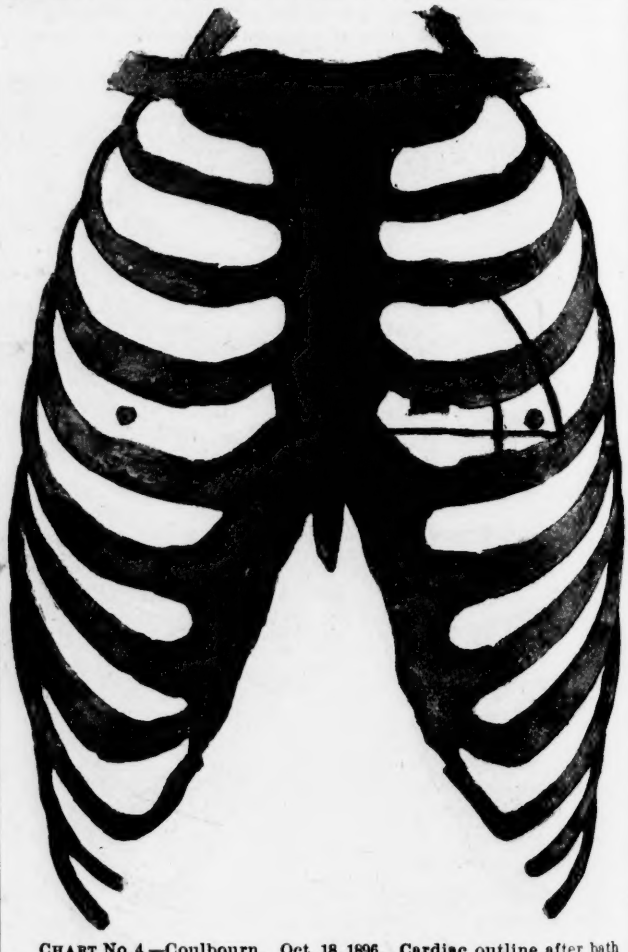


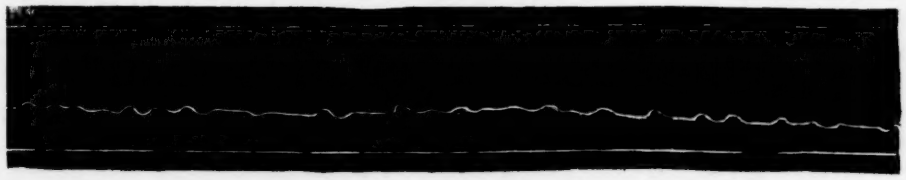
CHART No. 4.—Coulbourn. Oct. 18, 1896. Cardiac outline after bath No. 6, strength No. 1. Right border 1½ cm. from median line. In bath eight minutes.

NOTE.—In Charts 3 and 4 the outline on the right side of the chest extends too far laterally. It did not extend beyond the nipple. There was no change in his line after treatment.

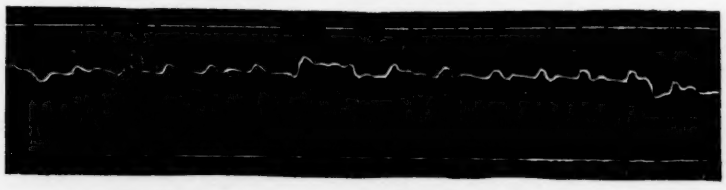
Charts Nos. 3 and 4 illustrate change of 1¾ cm. in cardiac area after six baths of strength No. 1.

ment could scarcely be regarded as such, so transient was it.

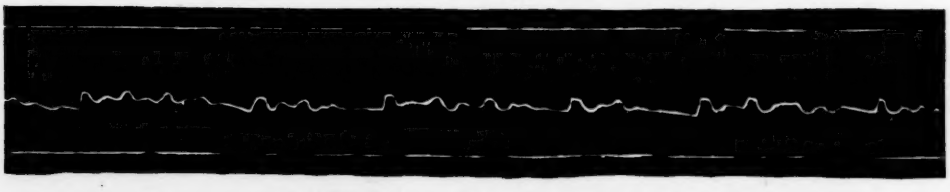
Of the three cases of continued improvement, the most striking is that of a colored man. It is a fact to be noted that whereas the white patients will resist for a long time vascular changes, yet in the colored race the outlook is relatively much graver. This was an old case who had visited the hospital a number of times and upon his last admission it was noted that there was a distinct thickening of the vessels. He improved very markedly under the treatment and although the baths were stopped at a date long before he was discharged from the hospital, he nevertheless,



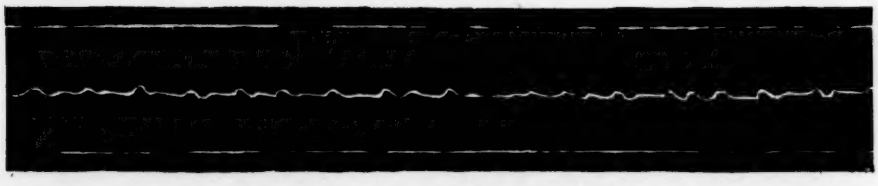
1. October 13, before treatment, 4¾ hours before first bath.



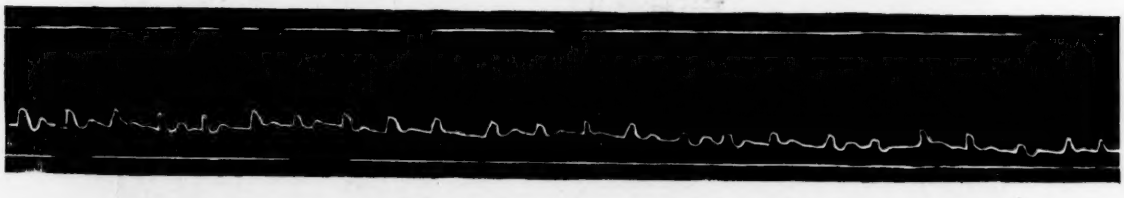
2. October 13. Bath No. 1, strength No. 1, at 4:30 P.M.



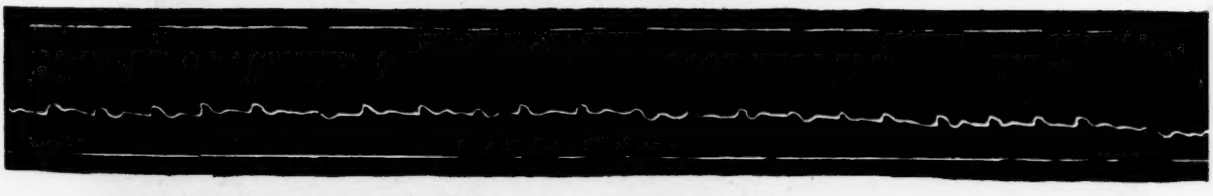
3. October 13, 10 P.M., 5½ hours after first bath.



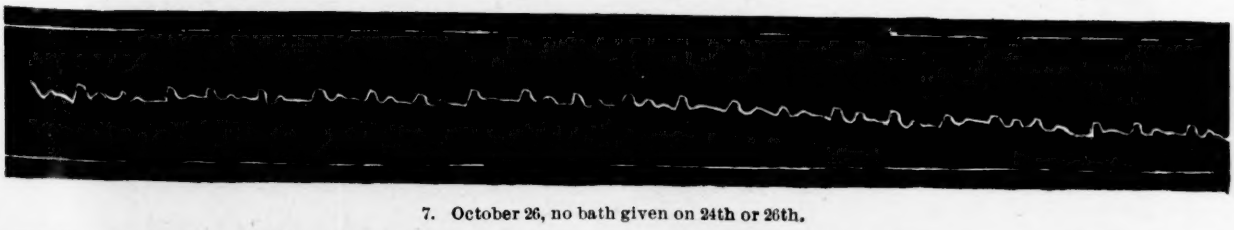
4. October 15, after third bath, strength No. 1.



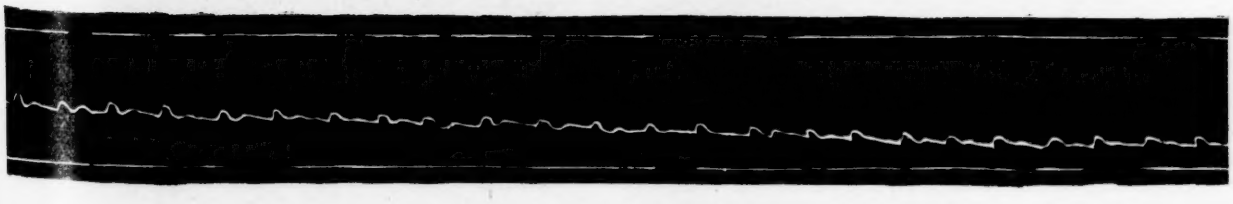
5. October 18, after sixth bath, strength No. 1.



6 October 22, after eighth bath strength No. 2.



7. October 26, no bath given on 24th or 26th.



8. October 30. No baths given since 27th.

CHART No. 5.—Coulbourn. Series of tracings to illustrate the regulating effect of the baths upon the pulse. The dyspnea, however, was so severe that baths had to be discontinued.

Schott Method of Baths and Resisted Movements.

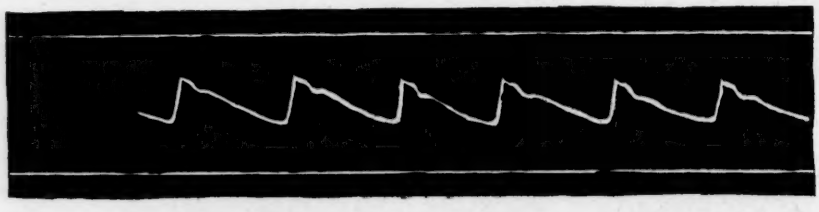
Diagnosis..... Name Wesley Williams. Hospital No 18074 Ward M

Date	Bath and Temp. of same or Movements	TIME Begun	TIME End	Respiration, Pulse and Heart: In bed R.	In bed P.	Just before R.	Just before P.	1st half R.	1st half P.	2nd half R.	2nd half P.	Pulse Tracing Cardiac Outline: Immed after R.	Immed after P.	10 min after R.	10 min after P.	SEE History (Should be recorded once a week): Pulse Pressure Before	Pulse Pressure After	Point Maximum Impulse Before	Point Maximum Impulse During	Point Maximum Impulse After	Color of Skin Before	Color of Skin During	Color of Skin After	Amt Urine in 24 hrs.	REMARKS
Febry 17. 97	No I 95°	5.25 PM	5.31	24	66	24	68	30	66	32	66	28	72	28	68	360	255	14 1/4	15 cm	15 cm	Natural	throughout		800	
Febry 21 97	No II 95°	1.15 PM	1.21	24	56	24	56	28	64	28	64	28	64	20	66	200	190	14	15		"		"		
" 24 97	No III 95°	11.28 am	11.33	28	54	28	64	28	66	28	64	28	64	24	62	170	150	14	14 cm	14 cm	"		"		
" 27	No I 95°	11.05 am	11.11	20	56	20	56	32	78	24	72	24	72	28	64	Tracing	Tracing	15 3/4	15.5		"		"		Patient up in wheel chair
March 1st	No II 95°	11.25 am	11.33	24	60	24	64	24	64	20	56	20	66	20	56	Tracing	Tracing	16	15.5	15.5	"		"		
March 3rd	No III 95°	11.45	11.54	28	64	28	64	24	72	24	64	24	64	24	64	280	210	15	15 1/4	15 1/4	"		"		
March 5th	No II 95°	5.05 PM	5.16	20	64	20	64	24	72	24	72	24	72	24	56	330		15 3/4	15.5	15.	"		"		
" 7th	No III 95°	11.17 am	11.25	20	64	20	64	24	84	24	80	24	80	24	72	280	240	15 3/4	15.5	14 3/4	"		"		
" 9th	No II 95°	5.20 PM	5.28	24	80	24	88	24	64	24	72	24	72	24	64	260	240	15	14.5	14.5	"		"		
" 11th	No II 95°	10.48 am	10.56	24	80	24	80	24	80	24	80	24	80	24	64	230	220	15.5	15	15	"		"		
" 13th	No III 90°	11.37 am	11.47	24	72	20	68	20	80	20	80	20	80	20	80	220	210	15	15	15	"		"		
" 15th	No III 90°	11.09 am	11.19	20	64	20	68	20	76	24	76	24	64	230	210	15 1/4	15 1/4	15.5			"		"		Pulse irregular
" 18th	No III 90°	11.30 am	10.46	20	80	20	72	28	92	28	92	24	80			230	210	14.5	15 1/4	15 1/4	"		"		Pulse irregular
" 19th	No III 90°	11.05	11.15	24	72	24	88	24	80	24	92	24	80	24	80	220	200	15.5	15.5	15 1/4	"		"		Headache during bath
" 21st	No III 88°	11.38		24	68	24	68	24	80	20	68	20	68	24	72	Tracing		14 1/4	15	15	"		"		
" 23	No III 90°	11.16	11.20	24	80	24	80	24	80	24	80	24	80	24	80			14 3/4	15	15	"		"		
" 26	No III 90°	5.08	5.18	24	70	20	80	20	80	20	80	20	80	24	80			14	15.5	15.5	"		"		

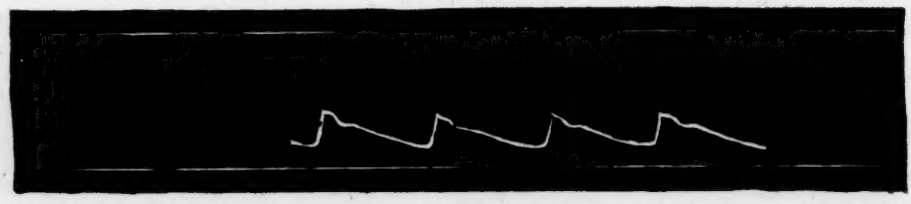
CHART No. 6—Showing method of recording observations. For pulse tracing of this case see Chart No. 7.

while under observation was most comfortable, having no return of his dyspnea or edema. In this case the point of maximum impulse instead of being moved in was moved out. (Chart No. 6.)

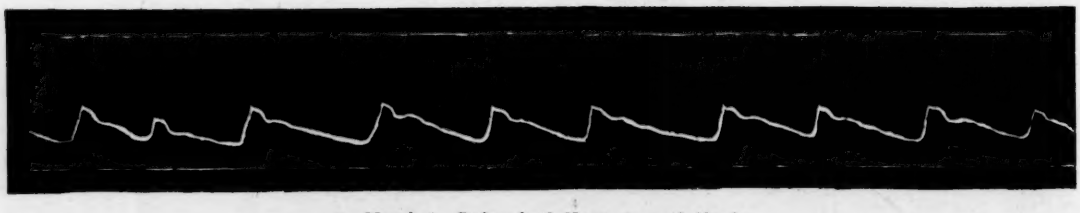
An interesting comparison may be made between this case and that of Hauser (Chart No. 8), to be mentioned immediately, with especial reference to the action of digitalis upon the pulse, and that of the baths. Chart No. 8 shows the influence of large doses of tr. digitalis given for a limited time at short intervals.



1. Williams (colored). Before bath No. 4, strength No. 1. Feb. 27, 1897.



2. After bath.



3. March 1. Before bath No. 5, strength No. 2.

4. Immediately after bath.

CHART No. 7.—NOTE. By some mistake strengths Nos. 1, 2 and 3 were given in succession. Patient had received three baths before above tracings were taken; the character of the pulse was much improved in spite of this active treatment. Compare these tracings under bath treatment alone with Chart No. 8, tracings taken under tr. digitalis treatment alone.

Chart No. 7 (tracings taken by Dr. Reuling) shows the less striking but more lasting change under the bath treatment.

The second case was that of mitral insufficiency, who was given both the baths and movements. There was no change in the point of maximum impulse or area of cardiac dulness. The patient was discharged in good condition.

The third case was one of tachycardia. The influence upon the pulse is seen in Chart No. 9. Of these three cases of continued improvement it will be noted that very little change took place in the point of maximum impulse, whereas in those cases which showed rapid improvement at first and which afterward terminated fatally, the change in apex was very striking. As far as our ten cases go the results are in favor of the following three points:

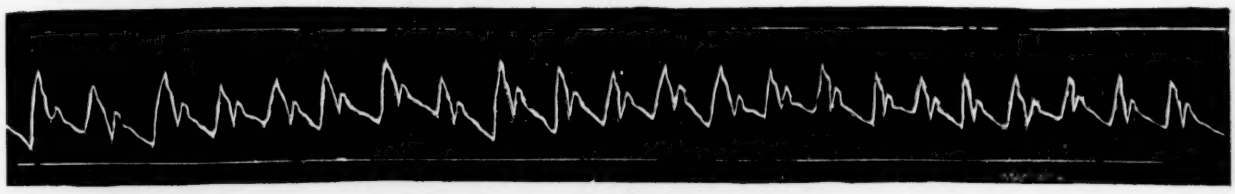
1. Extensive nephritis is a serious obstacle to good results from the baths and exercises, though if not too grave may be controlled by the treatment.

2. Extensive change in the position of the apex beat and cardiac outline do not necessarily indicate permanent good results.

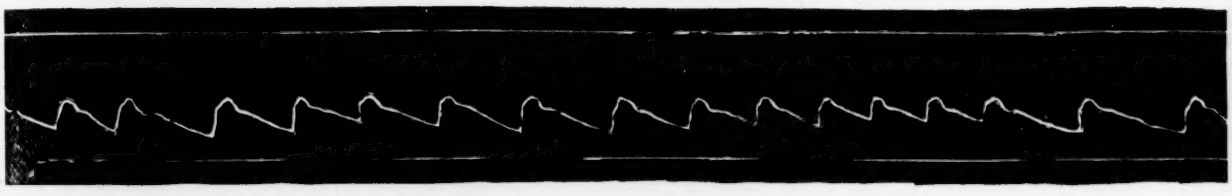
3. Arterio-sclerosis may not wholly contraindicate the treatment.

In regard to the drugs employed, it may be mentioned that in the cases of nephritis, diluents were freely given. Infusion of digitalis was employed in dram doses every four hours and occasionally the tincture of digitalis was used. Potassium iodid was administered, although sodium iodid is considered preferable. Strychnia, morphia, tr. strophan., nitroglycerin, were also used in some of the cases.

The diet laid down in our rules, while not strictly adhered to, was in the main followed out. While we have found no consistent change in the point of max-



1. Before course of digitalis. Tr. digit. min. xv, q. 4 hours ad. ʒ ij.



2. After course of digitalis.

CHART No. 8.—Hauser. Period of one day and eight hours. Compare with Chart No. 7, where the period was three days under bath treatment alone. Slowing of pulse less marked with bath alone than with digitalis, but effects more lasting in former.

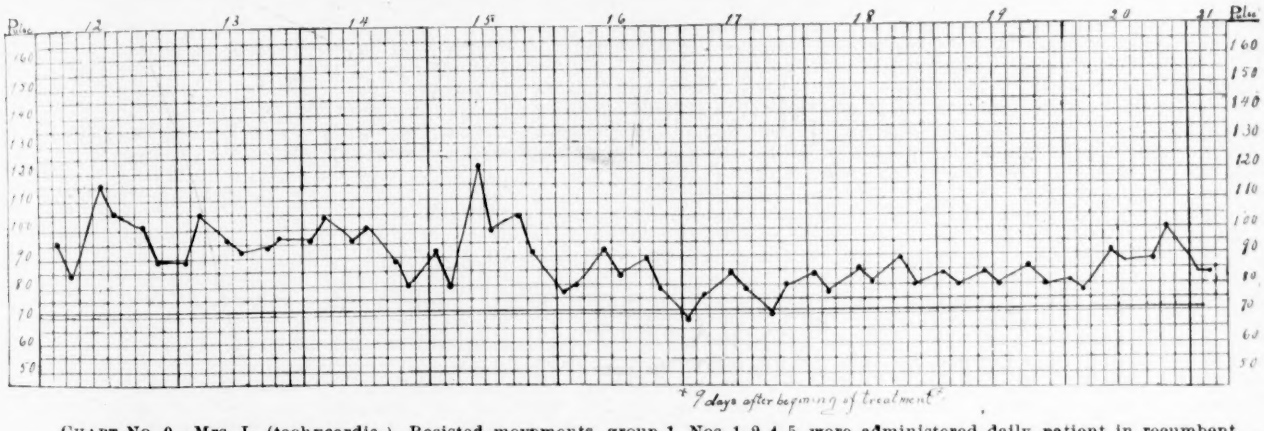


CHART No. 9.—Mrs. L. (tachycardia.) Resisted movements, group 1, Nos. 1, 2, 4, 5, were administered daily, patient in recumbent posture. Chart showing steadying of pulse.

Name.	Diagnosis.	Treatment.	Condition During Treatment	Result.
1. A. H. (Colored).	Aortic Insufficiency. Mitral Insufficiency (Relative).	Baths only.	Improved.	Death.
2. Mr. C.	Cardiac Dilatation—Arterio-sclerosis.	Baths and Exercises.	Marked Improvement.	"
3. I. A.	Chronic Nephritis.	Baths only.	No Improvement.	"
4. G. L.	Mitral Stenosis.	Baths and Exercises.	Marked Improvement.	"
5. G. S.	Dilatation and Glycosuria.	" " "	No Improvement.	No Improvement.
6. B. C.	" " Chronic Nephritis.	" " "	" "	" "
7. Miss B.	Tachycardia and " "	" " "	Marked Improvement only during treatment.	
8. W. W. (Colored)	Dilatation and Arterio-sclerosis.	Baths only.	Marked Improvement.	Well.
9. J. H.	Mitral Insufficiency.	Baths and Exercises.	" "	"
10. Mrs. L.	Tachycardia.	Exercises only.	" "	"

imum impulse or in the cardiac outline we have found in every case a slowing and strengthening of the pulse and a diminished tension. We regret that owing to the inability to procure a suitable arteriometer that the caliber of the radial was not properly recorded. It is our hope to pursue systematically the effect of the baths and exercises upon the kidneys. There seems to be here an important field for the treatment.

Naturally as yet our experience is very limited and this report is made simply to indicate the mode in which the measures are being tested at the Johns Hopkins Hospital.

DISCUSSION.

Dr. WM. OSLER of Baltimore—The introduction of the Schott method into this country is due, I think, to Dr. Babcock of Chicago, who demonstrated that it may be efficiently carried out in hospital practice and in private work. I have had cases treated at Nauheim with rather extraordinary results, and I have long known of the great enthusiasm displayed by Theodore Schott in his advocacy of this treatment. I think it will be, in a certain group of cases, a very positive advantage. The method of carrying it out is a little irksome and troublesome, but in any well-managed hospital, and indeed in private practice, it is perfectly feasible.

Dr. J. F. JENKINS of Michigan—I would ask Dr. Osler in what class of cases this treatment is indicated.

Dr. OSLER—It is more particularly indicated in limiting the effect of cardiac dilatation without advanced nephritis and without much sclerosis of the arteries. Valvular disease itself is not a contra indication, and I think the most suitable group of cases are those of dilatation of the heart without much degeneration of the muscular substance, more particularly cases occurring in comparatively youthful subjects, or in men between 40 and 45 years of age who have persistently eaten much and taken too much beer.

Dr. CHARLES STOCKTON of Buffalo—I would call attention to the fact that by the Schott brothers great stress is placed on the manner of conducting these movements so that the patient may not be overtaxed and more harm than good be done. A second point to which I would call attention is the carbonic acid in the artificial bath. I feel satisfied that the mixture recommended by Thorn is not of much use, for the gas escapes as rapidly as it is produced, and has little effect on the skin. To overcome this difficulty, I have resorted to the use of an ordinary soda-water tank, and by conducting the escaping fluid under the water in the tub have been able to produce marked stimulation of the skin, and I feel convinced that this is a valuable addition to the saline constituents.

A third point relates to the mode of action of the bath upon the skin. I listened with much interest to what the reader said, and his explanation of this apparent stimulation of the capillary circulation, but I feel that there is still something wanting. The mere dilatation of the capillaries by heat, or by salt, or by any other means, does not necessarily increase heart action. Now, it seems to me there must be someting else in the action of this bath which adds certain force to the circulation. My friend Dr. Woods Hutchinson has an idea that there is communicated to the arteries a real propulsive force through the rhythmic contraction of the arterioles as a result of this stimulation.

Dr. FOSTER of Pennsylvania—I should like to know whether the author tried the ordinary bath in the treatment of any of these cases. He has related ten cases treated by the Schott method, and I should like to know whether he would have us infer that he regards that method with favor. Certainly the report of the cases would seem to be against it.

Dr. HERRICK of Cleveland, Ohio—It seems to me that this subject has been treated within somewhat narrow lines; that an organ is being considered independently of the organism, and stress is placed on the importance of special treatment by special means, without consideration of the many circumstances leading up to the condition. We understand that the heart is subject to diseases in itself, and it is subject to disturbances of function by reflex relation to other organs. I am not quite satisfied with the etiology as stated. The treatment, it seems to me, has no reference to the etiology of the disease. Therefore I regard it with suspicion. The idea of the application of baths for an organic or functional disease involving the heart is somewhat beyond my comprehension. There is an antecedent condition which we should look after that involves the nutrition of that organ. That the reflex influence on the heart of the propulsive force of the arteries, etc., should produce any practical results I am not able to see. I am not familiar with this Schott treatment, so called. I wish to see the *rationale* between the therapeutics used and the disease. It seems to me that any treatment adopted should have a relationship to the etiology of the organic condition. I go back in my investigation of this subject to the question of nutrition—the nutrition of the heart. The heart may be disturbed by a variety of influences, mental or nervous or nutritional. I would say go back and look into the digestive organs. All nutrition depends upon certain factors, and all diseases involve disturbances of nutrition. We know that the heart is in more intimate sympathy with the digestive organs than with any others. Therefore, the first attention, and constant attention, should be given the digestive organs. In this it seems to me that we have a practical, a rational line of treatment, somewhat more definite than that of baths.

Dr. SMITH of New York—The paper is pointed and practical. It is practical, inasmuch as the reader took into consideration the very facts referred to by the last speaker, those bearing on the relations of the general system to the disease of the heart. In the consideration of almost any disease we can not leave out the intimate relation existing between the different portions of the organism, and the sooner we fix in our minds the fact that it is the individual and not the disease that we have to treat, the better will be our results. There is a condition of sclerosis in which the general arterial system is involved in the first instance and a secondary effect is shown in the condition of the heart. I am very glad the first speaker (Dr. Osler) alluded to the effect of beer, or any kind of alcohol, but especially beer, in producing certain organic changes in the heart, what the Germans call the beer-heart. That is, it seems to have a transforming influence upon the capillary circulation, and that reacts upon the heart. Now, at the New York School of Clinical Medicine, I have used for the last six months the Ling system of physical exercise in the treatment of heart disease, and there is no question in my mind that that system when thoroughly carried out in appropriate cases has a marked influence in reducing the area of cardiac dulness. In the discussion which took place at the British Medical Association, by Thorn and Granger Stewart, due stress was laid upon the why and wherefore of the Schott exercises and due regard was given to the fact that it produced dilatation of the arteries throughout the muscular system, and consequently the propulsive power of the heart while not increased as to quantity was improved as to quality. That is, while the propulsive power of the heart was not increased in pulsation because it was slow, the heart muscle was toned up and intensified.

Dr. JONES of Buffalo—Schott has observed that the cardiac area has diminished and the pulse increased in volume from exercise alone and in a number of cases under baths. As I understand it, suitable cases after being treated there, are sent to the mountains, where the Örtel treatment may be carried out and after time come back to Nauheim and are treated again. The compensation does not last longer, perhaps, than it would under due rest in bed and digitalis.

Dr. W. B. CAMAC—In reading up the reports on this treatment it is very difficult to approach it without a biased mind. We decided to try the treatment and see absolutely what it would do, and the report of the ten cases have been presented from an unbiased standpoint. I think we have not been misled one way or another at Johns Hopkins, and in reply to the remark about being for or against the treatment, I may say that I believe we are neither one way or the other. We are still observing. I did not mean to slight the importance of the exercises, but they have been considered so frequently and in such detail that it did not seem necessary to weary you with the drill. This we have entrusted to the nurses. The importance of the very lightest resistance is made a great deal of, and one who is familiar with the treatment soon realizes how important it is to avoid all undue resistance which might lead to fatiguing of the patient. We have, therefore, trained nurses who administer the treatment under the supervision of a physician. The exercises are given as much attention to as the baths. We have found that carbonic acid gas can be satisfactorily formed according to the suggestion of Thorn, but not waiting five minutes, for in five minutes it has largely lost its power. Put the patient in almost immediately after the two ingredients are mixed, and the effect is accomplished in four or five minutes. If it is necessary to continue it, put in only one-half of the mixture at first and the other half at the end of five minutes. The temperature of the bath is 82, 85 to 100 degrees F. The comparative effect of the ordinary hot bath and the Schott bath we have shown in the table. The baths were given in those instances alternately, the hot and the Schott. In most cases the amount of urine is greater after the Schott bath than after the hot bath. We

must be governed by what we find. There is absolutely nothing to be learned from mere theorizing, and I trust the facts presented in the paper and the diagrams will be the guide, not theory. They show that the salt bath has a greater influence on the kidney than the simple hot bath.

As to the etiology and the diet, we have laid down carefully studied rules which I think it is unnecessary to weary you with. The character of the diet, how much to give each day and the amount of wine or stimulants is carefully noted.

The Örtel treatment is carried out at Nauheim by sending the patients to walk up the Johannnesberg. As to the etiology, it is impossible to go into that, because the amount of changes which may follow any influence upon the heart is legion. To attempt to associate the lesion with the treatment is impossible. We can only say that the heart is dilated, its propulsive power is diminished. There is, therefore, a back pressure; there is cyanosis, a congestion. If in any way we can dilate the peripheral vessels and allow more room for that blood which is pressed back into the system, we are perhaps going to relieve the heart of its overwork and improve its nutrition, so that the dilatation may end in hypertrophy and compensation.

CLINICAL AND PATHOLOGIC FEATURES OF TWO CASES OF TYPHOID MENINGITIS.

Read in abstract before the Section on Practice of Medicine, at the Forty-eighth Annual Meeting of the American Medical Association, at Philadelphia, Pa., June 1-4, 1897.

BY A. P. OHLMACHER, M.D.

DIRECTOR OF THE PATHOLOGIC LABORATORY OF THE OHIO HOSPITAL FOR EPILEPTICS, GALLIOPOLIS, OHIO; PROFESSOR OF PATHOLOGY IN THE CLEVELAND COLLEGE OF PHYSICIANS AND SURGEONS.

It will scarcely be necessary to point out, to an audience composed of clinicians and pathologists of large experience, the comparative rarity with which typhoid meningitis is encountered. In fact, the presence of an actual meningitis was so rarely demonstrated in typhoid fever that much doubt existed, only a few years ago, as to the occurrence of this lesion purely typhoidal in its origin. Since 1890, however, several cases of typhoid meningitis have been studied by careful bacteriologic and pathologic methods, so that there can no longer be a reasonable doubt concerning the identity of this complication of typhoid fever.

In a comparatively small number of autopsies on typhoid fever cases, it has fallen to my lot to meet with three instances in which a cerebral meningitis could be demonstrated, and in two of these cases a thorough bacteriologic analysis revealed only the bacillus of typhoid fever as the infecting micro-organism. These two cases were, therefore, looked upon as examples of true typhoid meningitis, and it is to a report on them that your attention is invited. The third case, in which a mixed streptococcus and typhoid bacillus infection was found, has just been reported.[1]

The source of the clinical data for these cases was the records of the Cleveland City Hospital.

Case 1.—Typhoid fever of four weeks duration. Marked delirium in last week preceding death. Autopsy shows usual typhoid lesions of fourth week with acute hemorrhagic internal cerebral pachymeningitis and exudative leptomeningitis. Typhoid bacilli isolated from spleen, mesenteric glands and from meninges.

J. K., Irish, laborer, 25 years old, single, admitted to the service of Dr. A. F. Spurney at the Cleveland City Hospital, Jan. 18, 1896. His father and mother are both alive, and brothers and sisters alive and well. Aside from an attack of measles in childhood, patient does not recall any previous acute illness. He had a suppurating bubo in right groin nine years ago; no further venereal history. A month ago he went to work on an Ohio River boat, making a two weeks' trip which involved a great deal of hardship, and induced several attacks of diarrhea. Two weeks ago he went to Pittsburgh, stayed a week, then returned to Cleveland. Six days ago he again had diarrhea, with a feeling of languor and aching in the legs. Diarrhea persisted till his admission to hospital. The temperature on entrance (afternoon) was 103 degrees F., and the chart shows a fairly typical typhoid curve during the life of the patient, though the fever was unusually high (between 104 and 105 degrees F.) until death. The pulse averaged about 120 beats per minute. The urine was acid, contained a small though constant amount of albumin, and gave the diazo reaction. There were no other records to be obtained except that the patient was continually delirious during the last week of his life, and that he several times passed his urine involuntarily during this period. No suspicion of meningitis was entertained. Death occurred Feb. 3, 1896, seventeen days after entering the hospital.

Autopsy.—Fourteen hours after death. The body, which had been kept in a cool place, that of a man five feet, six and one-half inches in length, and weighing about 125 pounds, showed no significant cutaneous markings. The pleural sacs contained no free fluid. Both lungs were moderately adherent posteriorly. The pericardium contained 90 c.c. of clear fluid, but no other evidences of inflammation. The heart was of normal size and in the normal location. There was no excess of fluid in the abdomen, and the abdominal organs were normally located.

Both lungs were of ordinary volume, with edematous upper lobes, and hypostatic congestion of the lower lobes. The pulmonary pleura, corresponding to the areas of adhesion, was thicker and more opaque than the remainder of this membrane. The bronchial glands were softened and swollen, while the bronchi showed no gross lesion.

The heart was flabby, the surface smooth, the myocardium pale and more than ordinarily friable. The endocardium was intact.

The spleen weighed 220 grams, was swollen, with tense smooth capsule. The pulp was soft and dark red. The kidneys were of normal size. The capsule stripped easily. The cortex was pale, and, relatively, somewhat increased in thickness. The surface of the liver was smooth, the organ pale, the boundaries of the lobules not well defined, and the substance friable. The gall bladder showed no inflammatory lesions, and the ducts were intact. The pancreas contained small deeply injected areas in its substance.

Intestines.—The ileum of the small intestine was almost exclusively the seat of characteristic lesions of its lymph follicles. The solitary glands were generally swollen, and many of them in various stages of ulceration or of healing. The swollen follicles were especially numerous near the cecum. In the upper portion of the ileum the ulcers of Peyer's patches were generally rough, their floors being covered with necrotic debris or with granulation tissue; while in the cecal portion the ulcers were sharply punched out, with clean floors and overhanging edges. Several exceptionally large ulcers appeared in the ileum, close to its cecal junction. No ulcers were found in the appendix. Numerous swollen follicles and a few typical typhoid ulcers averaging half a centimeter in diameter were found in the colon about the cecal region. The mesenteric and retroperitoneal lymph glands were uniformly swollen and softened.

Brain.—The skull cap and the external surface of the dura presented no unusual features. As the dura was carefully stripped back it was found to adhere to the pia unnaturally over the right side of the cerebrum, by means of soft, gelatinous, yellowish flakes, and delicate fibers. This adhesion began about the region of the right Rolandic fissure and increased as the removal of the dura advanced. The gelatinous flakes give place to clots of blood which increased in amount until, over the anterior portion of the occipital lobe, a thick, quite dense mass of clotted blood was found producing a depression, roughly circular in outline, about 4 cm. in diameter, and 1 cm. below the surrounding level at its deepest point. This depression persisted throughout the subsequent handling and hardening of the encephalon. The mass of blood, or hematoma, measured about 120 c.c. in volume. The left side of the large brain was quite free from adhesions or hemorrhage, and no other evidences of this kind were found, except about the base of the brain where a few delicate fibers, not ordinarily encountered, were found between the hard and soft meninges. There was a general edema of the pia mater, and over the right cerebrum this subpial fluid was distinctly cloudy. Under the mass of blood the contiguous pia inclosed soft yellowish flakes, and here the cerebral surface was distinctly reddened. The dural sinuses at the base of the skull contained soft, red, non-adherent blood clots. No excess of fluid, and no inflammatory changes were apparent in the ventricular cavities. Aside from the area depressed by the hematoma, the brain substance presented no gross lesions. The spinal cord was not examined.

Histologic examination.—Portions of the various tissues, aside from the brain, were fixed in Carnoy's chloroform-acetic

[1] The Cleveland Medical Gazette, May, 1897.

alcohol mixture, dehydrated, cleared in cedar-wood oil, and imbedded in paraffin. The sections were affixed to the slide by the water-albumin method, and stained with various dyes. The cerebellum, medulla and pons were removed by cutting across the crura, and the cerebral hemispheres were separated by a longitudinal median incision. These portions of the encephalon were then hardened in bulk, in a mixture of five parts of 40 per cent. formaldehyde and one hundred parts of water. For histologic study, pieces were subsequently cut from the right cerebral hemisphere, dehydrated, and then handled like the other tissue. In this way the preliminary hardening in bulk fixed the soft meninges in their natural relations. As a general stain, the writer's formalin-safranin was used. Special stains were also made with formalin-methylen blue, carbolic fuchsin, and gentian violet after Gram's process.

Lungs.—The pleura was thick and fibrous and there was an increase of inter-lobular connective tissue beneath the thickened pleura, with dilatation of the air vesicles. Deeper down in the lung the alveoli showed only a pronounced congestion of the vessels in their walls. No marked histologic alteration could be detected in the heart, bronchial glands, or spleen.

Liver.—As a whole, the liver substance did not stain as well as usual. There was a slight inflammatory reaction in the connective tissue framework about the groups of lobules. An occasional hepatic cell contained fat droplets, but there was no wide-spread fatty change. Liver sections, colored with safranin, showed an abundance of small brownish pigment granules situated in the protoplasm of the liver cells. When subjected to Perl's hemosiderin test this pigment gave the characteristic Berlin-blue reaction and a wide spread hemosiderin pigmentary deposit appeared in the hepatic parenchyma. Numerous small foci of necrosis (the so-called "typhoid lymphomata") were scattered throughout the liver sections. These foci were especially well seen in sections double-stained with formalin-safranin and formalin-methylen blue.

The kidneys show a moderate degree of parenchymatous degeneration.

Brain.—A wedge shaped piece was cut from the hardened right cerebral hemisphere including a portion of the supramarginal and anterior parietal gyri with intervening sulcus along with the covering of pia mater. This portion of the cerebrum was anterior to the region depressed by the subdural blood clot. A series of sections from this tissue showed the presence of an undoubted fibrino-cellular exudate upon and within the pia. Several quite large masses of coarse fibrin threads lay either upon or beneath the soft meninges. Along with these masses of fibrin were a considerable number of newly formed cells. These cells were mostly gathered into groups of considerable size, and were either large cubical epithelial-like bodies with single vesicular nuclei, or small round cells with single dense nuclei. Small round cells with fragmenting nuclei were only occasionally found in this exudate. These groups of cells were usually situated between the pia and the cortex, especially about a sulcus into which they could be traced along with the extension of the pia. The proliferated cells were also disposed upon the dural side of the soft meninges, though not so abundant as beneath. The abundance of proliferated endothelial cells, with round cells of connective tissue origin, and the scarcity of leucocytes with polymorphous nuclei, gives the meningeal exudate a catarrhal instead of a purulent character, thus corresponding with the gross lesions. No evident alterations were demonstrable in the cerebral cortex, and the blood vessels showed no evidences of endo- or peri-vascular inflammation.

Bacteriology.—During the progress of the autopsy culture media were inoculated, with rigid precaution, from the spleen, mesenteric glands, bronchial glands, and from beneath the pia mater of the right cerebrum in the region of the subdural hemorrhage. From these sources, including the brain, absolutely unmixed cultures of a motile bacillus were obtained. This bacillus gave all the reactions of the perfect typhoid type when subjected to the differential tests now employed for the identification of the bacillus of typhoid fever. The only tests now recognized as of value, that were omitted, were those proposed by Elsner and by Widal, and this omission was occasioned by the fact that the cultures from this case died before the details of these methods had been made available.

A further confirmation of the results of the culture experiments in the case of the brain was obtained in the study of the sections stained with formalin-safranin, methylen blue, carbolic fuchsin and after Gram's method for bacilli with the morphologic and tinctorial properties of *Bacillus typhosus* were found in the fibrinous and cellular exudate and in the lymph spaces of the inflamed soft meninges. No other organisms could be found here aside from the bacilli, which were usually gathered in small groups.

Case 2.—Typhoid fever with profound coma and delirium. Death in fourth week. Usual typhoid lesions in intestines, spleen and mesenteric glands, with broncho-pneumonia. Extensive purulent cerebral leptomeningitis, ependymitis and dilatation of lateral ventricles. Typhoid bacilli in vast numbers, the only organisms found in meninges.

The patient, M. S., native born, 46 years old, laborer, married, was brought to the Cleveland City Hospital Jan. 28, 1896, in an unconscious condition and assigned to the service of Dr. A. F. Spurney. The only record of previous history that could be secured was that the patient became ill two weeks before entering the hospital. Temperature on admission (afternoon) was 103.2 degrees F. The patient was alternately delirious and comatose and did not regain consciousness during stay in hospital. Other nervous symptoms were not recorded. The temperature ranged from 102.2 to 103.8 degrees for the first seven days, with evening exacerbation. On the eighth day the fever rose sharply to 104.6 degrees and remained above 104 degrees for the next two days and then fell by daily stages till, on the thirteenth day after admission, it reached 100 degrees and death occurred. The urine was acid, of an average specific gravity of 1018, contained a small amount of albumin, and gave the diazo reaction.

Autopsy.—The autopsy was performed February 10, eighteen hours after death, and the corpse had been kept in a cool place. The body was wasted, 197 cm. long and approximately fifty-five kilos in weight. The skin was generally pallid except for a moderate postmortem lividity of the dependent parts. The mucous membranes were very pale. The abdomen was moderately and symmetrically distended. No free fluid existed in the peritoneal cavity, which was negative in other respects. The left lung was moderately adherent, especially about the posterior aspect of the upper lobe, and 120 c.c. of clear serous fluid was present in this pleural sac. A like amount of similar fluid existed in the right pleural cavity, though the lung on this side was not adherent. Both lungs were of good volume. The pericardial sac contained 30 c.c of clear yellow fluid. The heart weighed 260 grams and, aside from an increased pallor and friability of its myocardium, presented no changes. The aorta showed a few desseminated plaques of recent sclerosis about its origin. The right lung, weighing 650 grams, was generally congested and edematous. Small, dense, friable, non-crepitant, deeply injected areas were scattered through the lower lobe. The left lung weighed 550 grams and, aside from a moderate thickening and opacity of the visceral pleura, corresponding to the region of adhesion, was only congested and edematous. The bronchi were filled with frothy, muco-purulent, thick fluid, and their mucous lining roughened and deeply injected. The bronchial glands were black, swollen and soft. The larynx showed no ulceration.

The liver (1820 grams) had a smooth surface and was generally of a lighter hue than normal. The substance tore when the capsule was stripped and was less firm than usual. On section the surface was quite pale and close inspection showed the pallor to be especially marked at the periphery of the lobules, while the central portions were more deeply colored. The portal and hepatic veins were not unusually injected. The gall bladder contained a small amount of yellow bile. No distinct evidences of inflammation could be detected in its lining and its ducts were intact.

The spleen was swollen to almost twice the ordinary size and weighed 300 grams. The pulp was dark red and very soft.

The kidneys together weighed 250 grams. The cortex was pale, its vascular markings unduly prominent, and it relatively somewhat increased. The urinary bladder was about half full of urine. The pancreas contained distinct ecchymotic areas, which were not, however, distinctly softer than the general substance. The stomach was free from gross lesions.

Intestines.—The typhoidal intestinal changes were quite closely confined to the last meter of the ileum. Here swollen solitary glands, punctate ulcers of the solitary follicles and large oval ulcers of Peyer's patches were abundant. A few of the ulcers had clean bases but in most of them the floor was rough and contained either sloughing or granulation tissues. An especially large, round, ragged ulcer was located in the ileum near the cecal valve. No ulceration was evident in the appendix and this held true for the colon, although a few solitary follicles in the cecum were swollen. The mesenteric and retroperitoneal glands were much swollen, very soft and dark hued.

The brain weighed 1420 grams including exudate. The skull-cap and exterior of the dura were not visibly altered. The dura stripped readily over the dorsum of the cerebrum. At the base of the brain a few recent subdural adhesions existed. There was no marked excess of subdural fluid. On its removal the brain looked dull and lusterless, with certain areas more

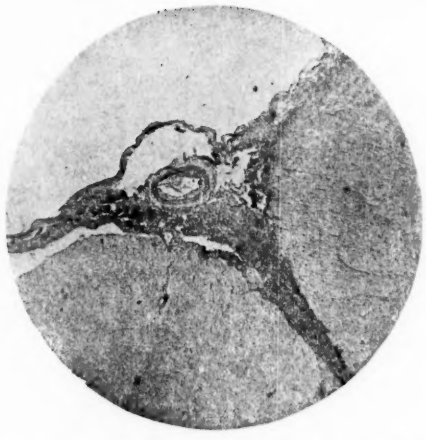


FIG. 1.—Typhoid leptomeningitis. Case 2. Portions of two cerebral gyri with intervening sulcus, and meningeal covering. The meningeal membrane is filled with inflammatory exudate. A small branch of the middle cerebral artery is seen in cross section, with its endarteritis.
Photographed with Leitz obj. 2, oc. 1.

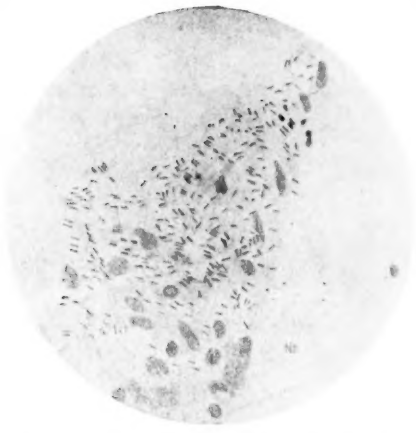


FIG. 2.—A portion of the arachnoid membrane from the same section as Fig. 1, showing the numerous typhoid bacilli.
Drawn from a photograph with Leitz obj. one twelfth, oc. 4.

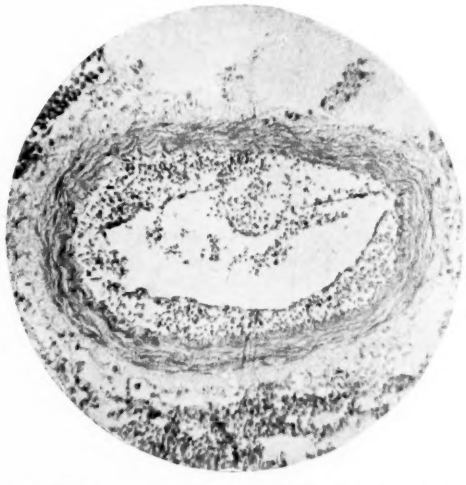


FIG. 3.—From same series of sections as Fig. 1. One of the branches of the middle cerebral artery showing the acute endoarteritis. Note the inner bounding membrane (endothelium), and the numerous small cells between it and the intima. Some of the small cells are also seen within the endothelial lining.
Photographed with Leitz obj. 7, oc. 4.

FIG. 4.—From another series of sections of the cerebrum in ase 2. A branch of the middle cerebral artery showing the complete obliteration of the lumen by the endarteritis.
Same power as Fig. 3.

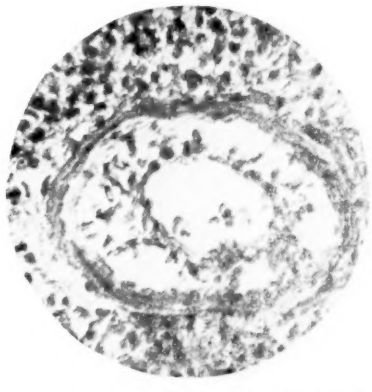


Fig. 5.—Same section as Fig. 1. A minute arteriole of the middle cerebral artery showing the endarteritis. The endothelium is raised well into the lumen of the vessel. There is a moderate sub-endothelial cellular proliferation, and a few cells lie within the lumen.
Leitz obj. one-twelfth, oc. 4.

opaque than others. The venous channels were turgid with dark red blood. Along the lateral aspects of both cerebral hemispheres broad lines of yellowish material accompanied the vessels of the pia mater. This appearance was especially prominent along the Sylvian and Rolandic fissures. At the base of the encephalon a milk-white, comparatively thin, turbid fluid filled the larger spaces left as the leptomeninx stretched across one of the larger clefts, particularly in the fissure dividing the two cerebellar lobes. On removing the cerebellum, pons and medulla, by cutting through the crura, no excess of fluid escaped, and, except for a slight injection of its lining, the fourth ventricle showed no change. The cerebral hemispheres were separated by a longitudinal median section and as the third ventricle was incised, a thin, white, turbid fluid escaped. This fluid continued to flow from both lateral ventricles, as they were exposed by the incision, until a quantity measuring 40 c.c. in volume had been obtained. The velum interpositum and choroid plexuses were deeply reddened and the ependyma was also reddened, with numerous hemorrhagic ecchymoses. The cerebral cortex was rather soft, but it was impossible to decide upon the existence of an actual inflammation of its substance. The meningeal exudate was present about the cervical spinal cord, though no further examination of this organ was made.

Bacteriology.—The turbid fluid from the meninges and from the ventricles was examined in fresh preparations and found to contain a few red blood cells, abundant pus cells, a few desquamated epithelial cells, protoplasmic and myelin debris, along with hosts of plump bacilli, some of which were actively motile, while the majority were engaged in an exaggerated Brownian motion. Stained smears from this fluid showed the same cellular elements, along with the bacilli. No other micro organism was found in these preparations.

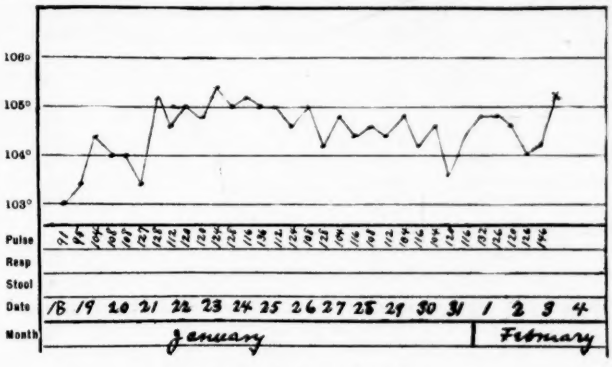
Agar dilution cultures, by the method of Banti-Grosglick, were prepared from various sources with great care. From the spleen, mesenteric glands, bronchial glands, and from beneath the pia mater, perfectly pure cultures of a bacillus were secured. This bacillus was exhaustively examined by the differential tests proposed for identifying *Bacillus typhosus* and found to react typically in all instances. The culture from the leptomeninx is still in my possession and has been used as a stock culture for making the Widal serum test for typhoid fever, since it gives a rapid and complete agglutination reaction with typhoid blood. It has also been grown beside the colon bacillus, on Elsner's medium, on several occasions, and here found to comport itself typically. From one of the consolidated areas in the right lung the typhoid bacillus and *Staphylococcus aureus* were isolated. No growth developed from the heart's blood. The colon bacillus was obtained from the urine in the bladder.

Sections from the brain, stained with formalin-safranin, methylen blue and carbolic fuchsin, exhibit countless myriads of bacilli in the soft meninges and in the meningeal exudate, similar in morphology to those obtained in the cultures. In sections stained by gentian violet, after Gram's process, the bacilli discharged all traces of color. The bacilli were crowded in dense lines in the lymph spaces of the meningeal connective tissue, or scattered thickly among the cells comprising the exudate.

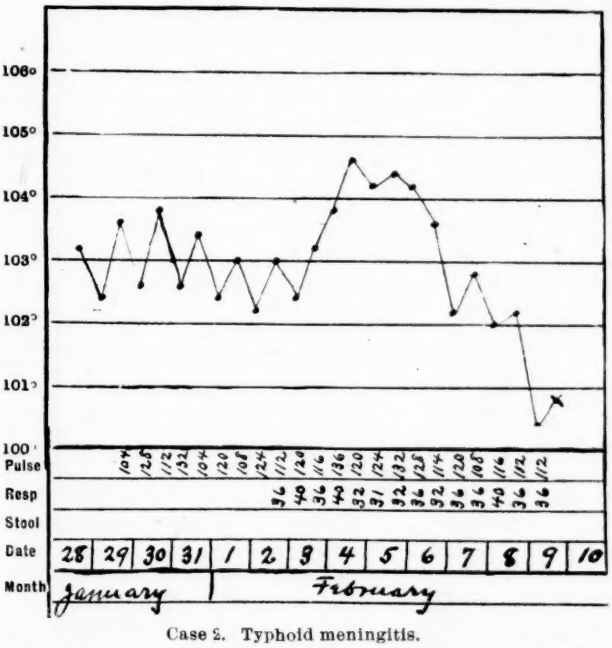
In the exudate filling the pulmonary air cells, hosts of bacilli, corresponding precisely with those in the meninges, were scattered about, with here and there an occasional large group of micrococci.

Histologic Examination.—The main interest from the histologic standpoint naturally centers in the study of the brain lesions in this case. Sections from three portions of the encephalon, including the leptomeninx, have been examined, viz.: From the cerebrum anterior to the Rolandic fissure (including a portion of the ascending and inferior frontal gyri with the inferior precentral sulcus); from the posterior occipital lobe of the cerebrum; and from the postero-inferior lobe of the cerebellum. The microscopic appearances in the meninges of the anterior cerebral and cerebellar regions were indentical. A layer composed of abundant and closely packed leucocytes with fragmenting nuclei, and of epithelial cells with single nuclei held together, in places, by a delicate fibrinous reticulum, was everywhere present between and upon the layers of the soft meninges. The exudate was especially abundant beneath the pia, and followed the sulcate extension of this membrane to its innermost depth. In the occipital lobe the exudate was very much less abundant, and in its character resembled very closely that found in Case 1. Here the proliferated and desquamated endothelial cells predominated while the pus cells were diminished. Here also the arterial changes now to be described, were absent. The existence of a parenchymatous cerebritis has not been definitely decided by the microscopic examination, since there is reason to suppose that the technique employed in preparing the brain substance for section was not best suited for preserving fine structural alterations.

This brings us to a consideration of another important feature in connection with this case, a feature of such interest that it merits a further and fuller description than can be given here, and I hope to be able to soon give a more detailed account of it. I refer to an exquisite and widespread *acute endarteritis* affecting the smaller arteries of the pia in both the anterior cerebral and the cerebellar regions; in other words, an endarteritis involving at least the branches of the middle cerebral and anterior cerebellar arteries. The process affects both the medium sized and smaller arterial branches, and varies from a partial to a complete obliteration. Serial sections from one of the larger vessels showed the advance from a partial to a complete obliterating endarteritis. In the more minute twigs the change most frequently results in complete obliteration,



Case 1. Typhoid meningitis.



Case 2. Typhoid meningitis.

and the newly-formed tissue fills the lumen of the vessel. The study thus far made of this condition seems to point to the conclusion that the endothelium of the intima is raised from its bed and forced into the lumen of the vessel by a subendothelial exudate; at least a distinct membrane with fusiform nuclei can be found in the vessels in which the obliteration is not complete, bounding the new cells internally; and where the occlusion is complete a central core of cells with laterally compressed nuclei seems to be the same membrane forced into a compact mass. Two distinct kinds of small cells, both poor in protoplasm, are to be found in the endoarterial exudate, one with nuclei composed of compact deeply staining chromatin and engaged in one or another of the stages of indirect fragmentation; while the others, comparatively less numerous, are slightly larger and possess single nuclei with the chromatin more diffused. These small cells do not differ in structure from the *pus cells of the general extravascular meningeal exudate*, and are united by delicate protoplasmic fibers which seem to bind the cells together by a delicate reticulum, though they are often

separated some distance from each other. These cells are generally located between the membrane looked upon as the displaced endothelium, and the intima, though they also occur within the bounding membrane. This colony of new cells does not extend beyond the elastic layer of the intima, which, together with the muscularis, seems to be absolutely intact. A peculiar feature of this intravascular alteration was the absence of the bacilli which were so abundant elsewhere in the meninges. The most careful search has failed to show bacilli within the larger arterial branches. An occasional bacillus, lying in a small arterial branch which was imbedded in a mass of pus, was regarded as accidencally transplanted during the technical manipulation. The bacilli are abundant about the arteries, even to the extent of invading the perivascular lymph space, but they seem to be effectually barred by the muscular media. Very few red blood corpuscles are present in the affected arteries, while the corresponding venous channels are choked with blood elements.

The softness of the cerebral cortex noted in the fresh gross specimen was doubtless closely connected with this arterial disease.

The liver showed a wide-spread fatty infiltration and a large amount of intracellular pigmentary deposit which gave the hemosiderin reaction. No focal necrosis was to be found in the liver. Hemosiderin was also present in the spleen and bronchial glands, but entirely absent from the kidneys.

The consolidated areas from the right lung exhibit a pronounced exudate composed of leucocytes and epithelial cells lying in the pulmonary alveoli.

In viewing these two cases from the clinical standpoint the insignificance of the symptoms pointing to the meningeal disease is the most striking feature, and corresponds to the majority of the cases of typhoid meningitis recorded. To bring out this point and to illustrate certain features in the pathology of this complication of typhoid fever, the following summary of the literature is presented.

The Index Catalog of the Surgeon-General's Library contains but five references to meningitis occurring in the course of typhoid fever, in the period from 1855 to 1887, and as no trustworthy bacteriologic examinations were made in these cases they can not be looked upon as typhoid menimgitis in the strict sense.

In the course of a study of meningitis, Neumann and Schaeffer[1] (1887) found an extensive purulent leptomeningitis in a woman brought to the hospital unconscious and who died in a few hours without furnishing any history. No lesions of typhoid fever were found, but pure cultures of a bacillus were obtained from the meninges and these, the authors were led to believe, were of *Bacillus typhosus*, from the general characters and from the positive results of the potato and fermentation differential tests. A very similar case was reported soon after by Adenot,[2] in which a woman presented profound symptoms of cerebral infection and died in eight days. Absolutely no typhoidal lesions were present in the intestines, spleen and mesenteric glands, but from the sero-purulent exudate in the soft meninges a bacillus resembling the typhoid organism was obtained. The only differential test here applied was the growth on potato, and we now know that this is not sufficient to identify the bacillus of typhoid fever. The case recorded by Balp[3] also belongs in the same category with those of the authors just noted. He found a diffuse purulent meningitis in a patient dying five days after a fracture of the skull, and in the exudate a bacillus resembling the Eberth organism was found, together with a species of diplococcus. The phenol and indol tests are all that Balp mentions having used for differentiation.

A case of meningitis occurring in the course of typhoid fever was described by Kamen,[4] in 1890, in a soldier who entered the hospital after having been ill for five days. A severe headache set in three days later, followed by delirium and unconsciousness, and death occurred eight days after admission to the hospital. Aside from acute splenic tumor and a single typhoid ulcer near the cecal junction of the ileum, the post-mortem examination showed an extensive purulent leptomeningitis. The cultures obtained from the spleen, mesenteric glands and meninges were identical, though only the potato test is mentioned as having been employed for identification. The following year Fernet[5] reported the case of a woman who developed headache, delirium, strabismus, exophthalmus, retention of urine and irregularity of the pupils in the course of a typhoid fever. At autopsy the characteristic changes of typhoid were found in the abdominal cavity, and a diffuse serous meningitis was also present. It is claimed that typhoid bacilli were isolated from the meningeal fluid, though no mention is made of special tests. Silva[6] likewise observed at autopsy in a female epileptic, 10 years of age, a sero-hemorrhagic leptomeningitis with a lobar pneumonia and the ordinary evidences of typhoid fever. Typhoid bacilli were isolated from the meninges and carefully identified. Still another case was reported by Honl,[7] who found a diffuse purulent leptomeningitis in a 21 year old woman who died in the course of typhoid fever. An exhaustive differential examination showed the only bacterial species obtained from the meningeal exudate to be *Bacillus typhosus*.

Cases essentially similar to those just noted have been reported since 1892 by Vincent,[8] Hintze,[9] Mensi and Carbone,[10] Stühlen,[11] Tictine,[12] Kühnau[13] and a second one by Kamen.[14]

Tictine reported two cases which came under his observation and he also produced a purulent meningitis in animals by means of subdural inoculations with typhoid cultures. The second one of his cases differs from all the others in that the patient was perfectly conscious during the last week of his life.

Profound unconsciousness, delirium, coma and often retention of urine are the symptoms most often described in these cases. Other symptoms which might suggest an actual meningitis are usually insignificant and can scarcely be looked upon as of diagnostic import To this rule, however, the case mentioned by Mensi and Carbone is a notable exception. Their patient was a girl 6 years of age who had been ill nine days before entering the hospital. The patient ran the course of a moderate attack of typhoid fever reaching the stage of apyrexia four weeks after coming to the hospital. Four days later a violent chill occurred with intense headache and a temperature of 39.2 degrees C. Delirium, opisthotonus, contractions, amblyopia and dilated non-resposive pupils were successively noted, together with a herpes labialis, paresis of right face and retraction of abdominal wall. Great prostration followed and death occurred four days after the onset of this relapse. The autopsy showed a fibrino-purulent cerebro-spinal meningitis with dilatation of the lateral ventricles, and a bronchitis of the medium and smaller bronchioles. Numerous typical typhoid ulcers in the stage of healing were found in the ileum and colon; the mesenteric glands were swollen and soft and there was softening of the spleen. A thorough bacteriologic examination of the meningeal exudate resulted in finding typhoid bacilli as the sole bacterial inhabitant.

REFERENCES.

[1] Neumann and Schaefer: Zur Aetiologie der eitrigen Meningitis; Virchow's Archiv, Bd. 109, Heft 3, 1887, pp. 477–492.

[2] Adenot: Recherches Bactériologiques sur un cas de Méningite

microbienne; Archiv. de Méd. expér. et d'anat. path., Tome 1, 1889, pp. 656–672.

3 Balp: Meningite tifosa; Rivista Generale Ital. di clin. Med., anno ii, No. 17, 1890, pp. 406–414.

4 Kamen: Zur Aetiologie der Typhus-komplicationen; Internat. klin. Rundschau, iv, No. 3, pp. 98–102 and No. 4, pp. 146–150, 1890.

5 Fernet: Méningite typhique par bacille d'Eberth; La Bulletin Médicale, 1891, p. 653.

6 Silva: Complicazione rara del tifo abdominale; Riforma Medica, Vol. iii, Nr. 210, 1891.

7 Honl: Die pyogenen Eigenschaften des Typhusbazillus; Centralbl. f. Bakteriol., Bd. xiv, 1893, p. 767 (Ref.).

8 Vincent: (Ref. by Stühlen) Schmidt's Jahrbücher, Bd. 237, Nr. 2, 1893.

9 Hintze: Ueber die Lebensdauer und die eiterregende Wirkung des Typhus-bacillen im Menschlichen Korper; Centralbl. f. Bakteriol., Bd. xiv, Nr. 14, 1893.

10 Mensi and Carbone: Un caso di Meningite cerebro-spinale da bacillo di Eberth; La Riforma Medica, Vol. i, 1893, pp. 14–16.

11 Stühlen: Ueber typhöse Meningites; Berl. klin. Wochenschr., Nr. 15, 1894.

12 Tictine: Contribution a l'étude des Méningites et des Abcès produits par le Bacille de la Fièvre Typhoide; Archiv. de Méd. expér., Tome 6, 1894, pp. 1–29.

13 Kühnau: Berl. klin. Wochenschr., Nr. 25, 1896.

14 Kamen: Ein weiterer Fall von typhoser Meningitis; Centralbl. f. Bakteriol., Erste Abth., Bd. xxi, Nr. 11–12, 1897, pp. 440–445.

INTERRUPTIONS IN METABOLISM.

Presented in the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-eighth Annual Meeting of the American Medical Association at Philadelphia, Pa., June 1-4, 1897.

BY I. N. LOVE, M.D.

EX-PRESIDENT MISSISSIPPI VALLEY MEDICAL ASSOCIATION.

ST. LOUIS, MO.

In the term metabolism we mean to express the group of phenomena whereby organic beings transform foodstuffs into complex tissue elements, and convert complex substances into simple ones, in the production of energy; in other words the entire process of tissue building, which includes the proper throwing off of unused débris and the elimination of excretory matter, the complete scheme of nutrition, tissue making, production of energy and the elimination of waste matter.

After an individual has secured his growth, if no mistake has been made, we have an animal mechanism which, under proper conditions, should be good for seventy or eighty years of continued work. Any break in the continuity of this mechanism can safely be interpreted as due to an interruption in metabolism. This interruption may be and generally is at first a light one and if taken promptly may be easily corrected. If this be neglected and permitted to continue we will sooner or later probably have a condition irremediable. All of the hopeless organic diseases, such as Bright's disease, diabetes, heart disease, including the various forms of carcinoma have such a beginning.

These breaks in the continuity of the nutritive process—metabolism—no matter how light or severe, result in the development or retention of poisons, begetting the conditions which can best be expressed by the term "gout."

The popular impression regarding gout as being related only to the joints is now known to be wrong.

The manifestations of gout are as manifold as the individuals. In one we may have it assume the form of a so-called dyspepsia, a catarrh of the stomach, a neuralgia, or that even which stimulates neuritis, rheumatic disturbances of the joints, a nerve poisoning with marked symptoms of nervous prostration, asthma, hay fever, etc., all along the line to the extreme limit of apparent organic disease.

Years ago Sydenham said, "gout is the lord of disease and the disease of lords," but it is more, it is the universal disease, including pauper and patrician. We know that 90 per cent. of the so-called rheumatism is gout, surely all of it, save the pronounced acute inflammatory variety suggestive of an infection, and by the way the infection was invited or made possible by the metabolic interruption, by the gouty condition. A very large number of the disturbances of the mucous membrane, such as bronchitis and cystitis at all ages, but particularly in advancing age, as well as skin affection like acne rosacea, the red nose, usually attributed to the excessive use of alcohol, when as a matter of fact the victims of it are often abstemious, and in many cases even ascetics, poorly fed and never cheered by the wine when it is red or any color.

Heredity is an important factor in all those cases. From generation to generation the family habit of "going off at a tangent, as it were," has been developed in the organs connected with metabolism. What are the prime causative factors in those metabolic disturbances? The answer is, errors of diet and checking of elimination.

The dietetic errors may be either too little or too much food, or food of an improper character. Faulty elimination may be due to improper clothing, chilling of the surfaces, neglect of the excretory organs, uncleanliness of the skin, carelessness as regards the proper emptying of the rectum and colon (a cultivation of the constipation habit), a neglect of renal flushing in not drinking a sufficiency of pure water, and bodily inertia. It is our duty to guard our patients against these mistakes in metabolism, by impressing them with the importance of proper hygiene, proper eating and drinking, and above all, with the value of work. True it is that a man can not live healthy nor long unless he earns his living "by the sweat of his face." We must all be "sons of toil," as well as "Sons of Temperance," if we would live a long life and a happy one. Indeed well may we say, "blessed be drudgery."

When these breaks in the continuity of the nutritive functions—the processes of metabolism, do occur they should be promptly corrected, for they invite infections, in that the system is put off its guard (so to speak), and tend toward dangerous organic diseases. Prompt attention to and correction of diet is essential; but in the matter of diet, as well as in every thing else, each individual is a law unto himself.

"What is one man's meat is another man's poison," in more ways than one. Let us in these cases of gout, as in all other diseased conditions treat the individual rather than the disease.

There are numerous cases in which a red meat, a roast beef diet, will produce such a metabolic interruption as to amount to a terrific gouty explosion if long continued. Other cases do better on a meat diet. On general principles sugar and starches should be eliminated from the diet list, but occasionally anemic victims of gout call for cereal food of the coarsest character.

Milk is almost the ideal food for these cases, indeed for all cases with crippled powers of digestion, assimilation and elimination. We should give immediate aid to elimination, through judicious stimulation and regulation of all the excretory organs, while the establishment of proper equilibrium of physical exercise and rest is demanded.

Physiology tells us that tissue building, repair and health depend on the proper glandular activity, and that the poison-resisting property of the human body exists in the blood. It is now well established that the element of the blood which possesses this property is the leucocyte, and that if the leucocytes are of sufficient number and possess their normal vitality

and strength, the pathologic or toxic condition will be overcome and health restored.

Nuclein, when formed in the blood, is the result of the action of the leucocyte upon the proteids. When introduced into the organism it acts in two ways.

1. It immediately excites the action of each leucocyte, causing it to proliferate or break into nuclei, producing leucocytosis, and the fundamental axiom of physiology is, the more active the leucocytosis the greater the vital resistance. 2. It furnishes material to the leucocyte which, under a depressed vital condition, it is unable of itself to construct from the proteids, while it so strengthens and increases the number of leucocytes that it overpowers the toxic germs with which it may come in contact. Thus it may be seen that protonuclein, which is a combination of all the nucleins of the body, is the true tissue builder and antitoxic principle of the organism.

Protonuclein is derived from the lymphoid structures of healthy animals without the use of any chemical. By a delicate mechanical process the nuclein is separated without changing the condition in which it exists in the organism.

Reliable information has been given that protonuclein is prepared from the following glands: 100 pineal glands and pituiary bodies of the brain, 100 salivary glands, 100 thyroid glands, 100 pancreatic glands, 100 inner linings of the stomach, 100 Brunner's glands and Lieberkühn's follicles, 100 thymus glands.

These are derived from the pig, with the exception of the brain, which is obtained from the ox. The methods and means to secure glands from healthy animals are carefully supervised by expert observers. All of the inert tissues are separated from the glands, after which they are passed through a disintegrating machine, and quickly dried by forcing warm air through them by a specially prepared machine, so rapidly that no change can possibly take place, for the vapor of benzoin is passed upward through the desiccator, enveloping the cellular elements and preserving them intact. They are then exhausted with ether, to remove any fatty matter, and again thoroughly dried by the same process, and the portion of the gland that is richest in nuclein, which consists of a little over one-third of it, is then separated from the whole mass by special machinery. It should be borne in mind, that the portion of the gland containing the nuclein is very readily converted into a powder, and consequently easily separated from the inert matter by sifting.

Surely animal therapy is physiologic medication, and whether we administer such agents as protonuclein, which is the active principle in regulating metabolism, or antitoxins, which oppose infectious diseases, we are working along the same lines. The former is the most physiologic and the elementary risk is the least involved. When we can administer remedies which have a physiologic basis, and are followed by the most satisfactory clinical results, we are pursuing the scientific course.

The very satisfactory results following the administration of protonuclein in so many seemingly varying diseases are explained when we realize that these diseases, whether stomachic, neuralgic, rheumatic, stoppage of growth, obesity, organic or infectious, are all due to conditions produced by the same cause, "interruptions in metabolism." In brief, protonuclein is the ideal remedy for the reëstablishment of the proper equilibrium of the metabolic functions; and three years constant use of the remedy, followed by almost uniform success justifies a continuance of the agent which is the key-stone in the arch of animal therapy.

3642 Lindell Boulevard.

BLOOD-LETTING AS A THERAPEUTIC REMEDY, BASED ON A REPORT OF TWENTY-SIX CASES.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1-4, 1897.

BY J. W. HOFF, M.D.

POMEROY, OHIO.

I desire to present a report of successful issues from the use of venesection as a remedy in the treatment of various cases met with in a continuous practice of over fifty years; not for the purpose of adding anything new to our knowledge of this subject, but to call attention again to this most valuable remedy which modern therapeutists seem inclined to relegate to a past age.

In the year 1844, with my preceptor, I was called to see a woman who had been in a stupor or coma simulating death for six hours, and all efforts of her physicians had failed to revive her. Noticing that the basilic and cephalic veins at the bend of each arm had many scars over them, I suggested that she be bled, as she had evidently been bled many times before for the same purpose. My preceptor Dr. Eyster, immediately opened the basilic vein and set me to rubbing the hand and arm to start the blood to the opening in the vein. After eight or ten minutes a full stream of blood leaped forth and when about two ounces had been withdrawn the woman awoke with a cry which frightened her attendants. The bleeding was stopped, and in ten minutes more the woman was cheerfully talking with the doctors, and told us she had been bled a great many times before by physicians in Baltimore, where she formerly lived, for the same trouble, and that bleeding seemed to be the only effectual remedy for restoring her to consciousness.

In 1845 I heard Prof. Meigs describe in the Jefferson Medical College a case quite similar which had just occurred in his practice, in which, after using all other remedies without avail, bleeding was resorted to with almost immediate relief.

In May, 1846, I located in Ripley, Va., and the day I arrived in the town I was called to my first patient, a man 40 years of age, in delirium tremens, with the most violent convulsions I ever witnessed. By the help of three strong men I was able to control him until I had opened the basilic vein and drawn three pints of blood. The convulsions soon ceased and, after tying the arm, I left my patient in the care of an attendant and went to my hotel. Two hours later I was called by the attendant saying my patient was dead. Hastening to his room I found he had loosened the bandage from his arm and had bled in his sleep until he fainted. I soon tied up the arm and revived him, and took from the bed one-half of a tin wash-basin of blood clot. I remained with him until he was again comfortable, and the next morning he resumed his accustomed duties as clerk of the court, saying he had not felt better in years.

Two weeks later I was called to see an attorney, 23 years of age, who had fallen in the street from sunstroke. I found him unconscious and breathing very hard, face flushed and temple veins very prominent.

I immediately took from two to three pints of blood from the cephalic vein, when consciousness returned; I then applied cold water to the head and enjoined rest until evening. He, however, disobeyed my instructions and walked two squares to his office, but without harm, as he was able to attend to his usual business the next day in the court room. I would not dare bleed to this extent now, as I would probably be prosecuted for malpractice.

In June, 1846, I was called to see a lady 32 years of age who had a severe attack of bilious fever. She had had similar attacks the three preceding years and each time was three months in recovering, besides being badly salivated. I promised to have her about within ten days and without salivating her. I found her with high fever and delirious. After bleeding her to the extent of two pints the delirium ceased. I then gave her an emetic of ipecac, and followed this by twenty grains of calomel and ten grains of quinin washed down with a pint of very cold well water. The lady's husband protested and said the calomel would surely salivate his wife and she would die. I assured him that she would not be salivated. I left my patient comfortable that evening, and when I called at eight o'clock the next morning she was sitting up in bed eating toast and tea. There had been profuse sweating during the night and the physic had operated effectually; the pulse was normal and there was no fever. I gave no more medicine but ordered rest and diet. On the following morning the patient was able to sit with the family at the breakfast table, to the great relief of her husband. She was literally well and was not salivated. I am sure the thorough bleeding relieved the congested liver and contributed greatly to the recovery.

I treated a number of similar cases during the next three months with like results. There were eight deaths in the same township that year from this disease, but none of them were bled or treated by me.

In November, 1846, I was called to Ravenswood in consultation with three other physicians to see a boy 13 years of age, with pseudomembranous croup of three days' duration. The boy was cyanosed and rapidly passing into a condition of asphyxia. After learning of the preceding treatment and seeing no good results, I advised bleeding freely as a last resort. My advice was not taken, the other members of the council maintaining that it would do no good and would probably hasten death. After leaving the council and before I had reached the hotel, the boy's father came after me and urged me to return and bleed the boy, as the other doctors had gone home and left his boy to die. I reluctantly returned with the father, had the boy stripped and put in a warm bath, and bled him from the arm in the bath until near fainting; I then took him from the bath and wrapped him in a warm blanket and laid him in bed, where he breathed freely and easily. He went to sleep and slept two hours without coughing or hoarse breathing. When he awoke it was with a hoarse cough and flushed cheeks. I ordered a new bath and opened the same vein again and bled him to fainting. We removed him from the bath and put him in bed as before, and from that hour there was no more hoarse breathing or metallic cough. The boy soon convalesced to perfect health and lived to be a prominent banker and useful citizen. No other medicine was given in this case except mild expectorants. For ten days he spoke only in whispers and coughed up quantities of false membrane and tube-casts.

In the year 1857 my oldest son, 3 years of age, and a nephew of about the same age, took pseudomembranous croup at the same time, and for three days and nights I gave them constant attention and used every means at my command to relieve them, but all medical treatment utterly failed and my nephew died on the third night. My son was so nearly dead that he could not be laid down, and was badly cyanosed and gasping for breath. I determined in spite of my family and friends to bleed him. I bled him in an erect position in the arms of his uncle, taking about two ounces of blood, when he fainted. I then laid him in a horizontal position and revived him, and when he recovered he breathed easily and the cough was gone. The inflammation and fever subsided and the formation of the membrane ceased. This resulted undoubtedly because of the revulsive effect of the blood-letting. The child had a good convalescence, but for eight or ten days could not speak above a whisper and coughed up great quantities of membrane. He is alive and well today, and so far as anyone knows he never experienced any bad effects from the treatment.

In 1850 I was called to see a gentleman 65 years of age who had been sick with the measles for a week, and the measles would not come out. He had taken quantities of teas and toddies, been steamed and otherwise tortured, and was then delirious, with high fever and great blood pressure. There was evident congestion of the brain and lungs. After bleeding him two and one-half pints he fainted, and when he revived he was conscious and asked for a drink. After drinking a pint and one-half of very cold water the fever subsided and he went to sleep. He had not slept more than twenty minutes when the measles came to the surface and in two hours they came out so abundantly that he could not see; he was kept under mild cathartics and diaphoretics and made a good recovery without further treatment.

In 1851 I was called to see a lady 26 years of age who was having a severe attack of puerperal fever with peritonitis of about six hours' duration. I bled her until the tongue blanched, taking about two pounds of blood; gave twenty grains of calomel with opium and ipecac, and ordered turpentin and camphor liniment over bowels. The next morning the patient had slight fever, no pain, but some tenderness over the bowels. This patient recovered entirely in eight or ten days. I had treated two other women having the same difficulty just previous to this case but without bleeding, and lost both cases. I have never lost a patient with this fever that I have bled freely within six hours of the inception of the disease.

In 1852 I was called hastily to see a gentleman who had had a stroke of apoplexy. He was unconscious and struggling in spasms. I bled him a pint and one-half, when he revived and soon recovered without any other treatment. I have bled many for the same trouble soon after the attack, and with uniform good results.

In the fall of 1853 I was called to see a lady 20 years of age in her first labor. I found her in violent and continuous spasms of eclampsia. I gave her chloroform with but slight relief, and tried to deliver the child but found insufficient dilation. I bled her nearly two pints when convulsions ceased, but the patient could not be aroused. No labor pains were apparent, but the cervix relaxed well after the bleeding. I turned and delivered the child still-born and

it could not be revived. The patient had no more spasms or fever, but lay for thirty-six hours in a profound stupor. She then aroused in her right mind, but had no recollection or knowledge of what had taken place after the first spasm. She experienced no secondary bad effects and her next confinement was normal.

In 1864 I was called to see Mrs. S———, aged 22, in her first labor. I found her in a violent attack of eclampsia. I immediately bled her to the amount of two pints when the spasm ceased. In a few hours I delivered her of a healthy child. The mother had no more spasms and a good recovery.

In 1847 I was called to see a young lady who was suffering with a severe attack of angina pectoris and found her in great distress and almost asphyxiated, being unable to lie down. I bled her freely in a sitting position until spasms relaxed. I gave her no further medication but enjoined rest. In a few days she regained her usual health.

In 1849 I was called to see a young man 15 years old who was having a violent attack of cerebrospinal meningitis. He was wildly delirious, spine stiff and curved backward. I bled him to the verge of syncope, applied hot packs all along the spine and neck and over the heart, and gave a large mercurial purgative combined with opium. The rigidity of the spine gave way in twelve hours after the bleeding. The delirium was also relieved at the same time, and the young man had a good but slow convalescence.

In 1848 I was called to see a young woman 22 years of age who had double pleura pneumonia in its worst form. I bled her to the verge of fainting, relieving the congested lungs and pain, then gave her the usual treatment for pneumonia and she was up in eight days' time. I am confident I have cut short many such cases by bleeding freely in the first stages of the disease.

In 1854 I was called to a patient 30 years of age who was having a violent attack of inflammatory rheumatism. He could not move his limbs or body in bed, and the joints were badly swollen and inflamed. I bled him until his tongue turned pale, and then gave him twenty grains of calomel, two grains of opium and two grains of ipecac. He perspired freely during the night, and by morning was greatly relieved of pain. He gradually improved for ten days and could then walk the streets by the aid of a cane.

During the years 1846 to 1856, I was frequently called to treat a gentleman about 26 years of age who had frequent attacks of epileptic convulsions. After failing to relieve the convulsions by treatment, I found I could succeed by opening a vein and starting the blood to flowing freely. I did not usually take more than six to eight ounces and often not more than four ounces. The flow of the blood seemed to equalize the circulation, thereby relieving hyperemic conditions in the brain.

In 1852, while crossing a river on horseback, I was stricken with sunstroke. I was blinded instantly with an intense pain in my head. My horse carried me home and stopped at my door. My wife met me and led me into my office where I lay down on the floor and had cold applications made to my head, but getting no relief I had my left arm tied up and by feeling I opened the basilic vein and bled myself until the pain in my head ceased. In a half hour I was able to sit up, and the same evening walked out in town with no pain in my head nor other bad feelings. I am confident I lost from three to four pints of blood and had no unfavorable secondary effects.

In 1856 I was called to see a gentleman aged 20, who was having a violent attack of brain fever. He was wildly delirious with a high fever. I bled him to nearly fainting, applied ice to the head and the delirium subsided. I gave a mercurial purge with sedatives and he made a good but slow recovery. The same year I was called to see a lady 25 years of age, having a severe attack of acute pleurisy. I bled her nearly a quart and the pain was very soon greatly relieved. The pain was further relieved and cure resulted with only a hop and vinegar poultice to the side.

In 1863 I was called to see Mrs. A———, aged 30, who had acute catarrh of the head and congestion of the lungs. After bleeding her to near fainting, the relief to head and lungs came almost immediately. The cough and blood-mixed sputa were greatly lessened. I afterward used the customary treatment and the patient recovered rapidly and was up and around the house in a week's time.

In 1854 I was called to see a gentleman 54 years of age, weighing about 250 pounds who had had a stroke of paralysis the previous day. Other physicians had been in attendance but had failed to relieve him. I found him completely paralyzed so that he could not make any voluntary movement. He could not swallow anything. Finding that he had not been bled, I advised bleeding, and after drawing over three pints of blood he was bathed with strong stimulants. In an hour he opened his eyes and two hours later drank a little water. Four hours after bleeding he was given a large dose of calomel. Next morning he was able to make slight movements of the voluntary muscles of his limbs. I bled him again, one and one-half pints, and left him to return thirty hours later, when I found him able to swallow fairly well, to move his limbs considerably but unable to speak. In three weeks this man had so far recovered as to be able to walk about his house and yard, and in six weeks he was practically a well man with the exception of his voice which he never recovered. He lived for twelve years and died of dropsy.

In 1858 I was called to see a lady 30 years of age, who had been violently insane for a week. She had to be guarded day and night to prevent her from killing her own friends; she seemed determined to kill her husband. I secured her confidence and persuaded her that she had a bad headache (which was true) and proposed bleeding her for it. She willingly consented. I bled her in a sitting position until she fainted, taking about one quart of blood. She soon revived and was calm and quiet; and after two or three hours' sleep awakened rational. She then consented to take treatment and in two weeks from the time she was bled she was in her right mind, and her health recovered so far that she resumed her usual household duties. She never had another attack of insanity.

In 1876 I was called to treat a woman for insanity. She was 32 years of age and the mother of four children and had always had good health. She was violent and the sight of her husband invariably threw her into a rage. Obtaining her confidence I secured her permission to bleed her. I bled her nearly to fainting and she became calm. I then gave her a brisk mercurial cathartic and kept her under the influence of nerve sedatives. In three weeks' time she was well and has remained so since.

In 1876 I was called to see a woman 20 years of age

who had been confined two months previously and had a continuous uterine hemorrhage ever since. The hemorrhage was not excessive but sufficient to keep her in bed most of the time. She was anemic. Specular examination showed the parts in normal positions and the flow to be intra-uterine, with no indications of intra-uterine tumors. I therefore concluded that there was a constitutional tendency to hemorrhage. I concluded to bleed from the arm with the idea of stopping the intra-uterine flow by a revulsive effect. I drew from the arm about a half pint of blood, when symptoms of fainting appeared. I then stopped the flow and put the woman to bed and ordered her to keep quiet and in a horizontal position. The uterine hemorrhage ceased and the next day I ordered a tonic of iron and cinchona. She speedily recovered and had no further uterine hemorrhage.

In 1894 I was called in consultation with two other physicians to see a man 56 years of age, weighing 225 pounds, who had been for two days in a state of complete paralysis, unable to move and in a profound stupor. I advised blood-letting but his physicians had never bled any one and requested me to do it. I opened the basilic vein and took between three and four pints of blood from him. In an hour afterward he opened his eyes and made some movements with his left arm and leg. He was able to swallow some fluid. I advised that he be bled the next day to a like amount; this was done and convalescence was without backset. This man fully recovered his usual health so that he is able to attend to his duties as a farmer.

In 1895 I was called in consultation with three other physicians to see a woman 30 years of age, who had been having violent spasms of eclampsia for six hours. She was nearing her full term in pregnancy. The spasms came on intermittently, occurring with every pain, the patient being in stupor between spasms and unconscious all the time. Digital examination showed no dilation. I advised bleeding, and this was done to the extent of over two pints. The spasms soon almost entirely ceased, and in three or four hours dilation took place, and three hours later she was delivered of a dead child near full term. The woman made a slow recovery but is now well.

I could augment these reports considerably if there were necessity for it. My desire is to call your attention anew to this almost out-of-date method of meeting cases of emergency, and to urge physicians to equip themselves with the proper knowledge and instruments for resorting to this expedient in cases of sudden congestion of the vital organs, believing that such positive good results can be obtained by no other therapeutic agent, particularly in desperate cases. I have had uniformally good results from this treatment in puerperal fevers, eclampsia, paralysis from congestion of the brain, brain fever, meningitis and cerebro-spinal meningitis, pneumonitis in its first stages, congestion of the lungs, liver and abdominal viscera, peritonitis, croup, tonsillitis, hemorrhage of the lungs and incipient phthisis. Repeated bleedings will do more to cure consumption in its early stages than any other single agent, especially when used in conjunction with an open air life and in a dry and medium high atmosphere. I do not wish to be understood as advocating blood-letting indiscriminately, but want to call attention to its value in cases where indicated, and where in my hands it has proved to be invaluable. I would have every medical student instructed in the art of venesection in all its forms and its therapeutic value and use. Blood-letting is today almost a lost art, not because of its ineffectiveness, but because in times past it came to be the great remedy of quacks and charlatans, and by abuse lost favor with physicians. The assertion that because "blood gives life, you jeopardize life when you withdraw blood," is not true even in normal conditions; but in these emergencies it is neither true in theory, practice nor fact; and the operation of venesection is perfectly legitimate and imperative when necessary to relieve suffering or to save life.

A PLEA FOR A UNIFORM DIASTASE TEST.

Presented to the Section on Materia Medica, Pharmacy and Therapeutics, at the Forty-eighth Annual Meeting of the American Medical Association, held at Philadelphia, Pa., June 1–4, 1897.

BY C. C. FITE, M.D.

NEW YORK.

Considering the great importance of diastase as a therapeutic agent, it is certainly to be regretted that, up to this time, no uniform test has been agreed on for determining its starch-converting power. My purpose in presenting this subject before the Section is to ask your attention to this fact, and to suggest that a committee be appointed to present the matter before the United States Pharmacopeia Revision Committee, with the hope that the next edition of this work will contain a test which can be adopted as a standard and prevent the confusion now existing. It is a great misfortune that we have no uniform diastase test, and we should urge upon the committee that all of the tests now used by various chemists and manufacturers of diastasic products be carefully examined into and the best test adopted as a standard.

One of the complications due to there not being a standard test is that various manufacturers of diastasic products are constantly misconstruing, and therefore naturally, in the heat of business competition, misrepresenting the claims made by another, working along different lines, using different tests, reaching different conclusions, and representatives of such houses receiving instructions which they do not always fully comprehend, not always being chemists themselves; the medical practitioner has to listen to various statements as to the converting power of various products, while these contradictions only serve to destroy his faith in chemists, and weaken his confidence perhaps in all parties concerned, and his proper appreciation of diastase as a therapeutic agent is destroyed; and this does a great deal of harm without good results to anyone. A standard test would settle all this, and I am sure that no reputable manufacturing chemist would object to such a test being adopted, but would cheerfully accept one which met the approval of the Revision Committee of the United States Pharmacopeia.

The true scientific spirit is to arrive at the truth, and it is to be regretted that some presumably reputable manufacturing houses constantly mislead the profession by sending out literature claiming that their products contain diastase when they do not, and in other cases intentionally misleading their readers as to the amount of diastasic power. As long as we have no standard test, it is impossible to prevent fraud of this kind, because so long as there is no standard test, different methods of testing will lead to different findings, and no definite and accurate conclusions can be reached.

Any one taking up the study of this matter will

find one chemist talking about 257 degrees of diastasic power, another will refer to 3 per cent. value, another will give a ten minute test, another thirty minutes, while others will not mention any time at all. Some years ago I had occasion to approach, or I should say reproach, a manufacturer for claiming diastase in his liquid malt extract, for I told him that I could find none in it. He asked me how long I let the starch remain in the solution? I replied, "Thirty minutes." He asked me to call at his office the following day, which I did, and he showed me a sample of partially digested starch. I asked him how long he allowed the starch to remain at the temperature of 100 degrees with the liquid malt extract, and he replied with a smile, "Eighteen hours."

One of the difficulties in establishing a standard test which would meet all requirements, and not unduly prejudice the prescriber against any given semi-solid or dry malt extract containing diastase, would be that such preparations have a certain food value, and are used also as vehicles for various medicaments. Therefore, it would be unfair, and practically impossible, to isolate the diastase contained in them so as to make a comparison with an isolated diastase, such as the one known as taka-diastase. It would therefore appear to me that the only way to solve the problem would be to have a test which would show how many times its weight a given product containing diastase would convert of starch in a given time. The prescriber could then readily estimate what dose he would administer of one of these preparations, by keeping in mind the amount of converting power represented by such a product, whether it was the malt extract plain or one of those used as a vehicle for any given medicament. This makes it more complicated to establish a satisfactory test for diastase than it would for pepsin.

Some recently exploited dry forms of malt containing diastase appear to have some power in liquefying starch, but only to a certain extent, and not by any means completing the process in the manner we should reasonably expect. All difficulties of this kind, not losing sight of some of the liquid malt extracts which are supposed to have diastatic properties—but have not—could be cleared up, if there was a standard official test, and producers of preparations could not then as readily make false claims and hide themselves behind some supposed test with a long name to it, that nobody else ever heard of or ever knew anything about.

I have had occasion to confer with quite a number of chemists on this subject, and the difference of opinion found is simply astonishing, while it is not to be wondered at that medical practitioners have grown to be somewhat tired of the whole subject.

One of the difficulties to be met with in arriving at a proper solution of this question, is that some chemists use a test the purpose of which is to determine how much maltose is formed in a given time, whereas others merely watch for the period when free starch disappears. From a therapeutic standpoint, our desire should be to so supplement the ptyalin with diastase that we could confidently expect the proper conversion of starchy food into assimilable products, such as maltose and the various dextrines, so that the duodenal secretions would, without undue effort, finish the process. I would therefore say that a thirty minutes test, and the disappearance of the free starch within the thirty minutes, in a neutral medium at 100 degrees F., should form the basis of a reasonable test from the practitioner's standpoint; and surely diastase is produced for the physician's prescriptions and not for the chemist's amusement.

It is well established that the ptyalin of the saliva ordinarily acts for at least thirty minutes after the close of an ordinary meal, as the stomach contents does not generally reach the degree of acidity necessary to impair or destroy diastasic action before that time. It is therefore evident that, as diastase is administered therapeutically during or immediately after a meal, a thirty minute test would be of more value to the medical practitioner than any other, and would enable him to judge more correctly as to what dose of diastase he should administer to a given patient, and as to whether he should administer an alkali before the meal is taken.

A standard test should not only specify the exact degree of conversion of the starch, the temperature, the number of minutes, but should also designate what variety of starch is to be used, as it is well known that no two varieties of starch are acted upon by diastase in the same way. Bermuda arrow-root starch is uniform and readily obtainable, and would be the most desirable, as various brands of corn starch and potato starch differ very greatly in reaction and physical structure.

It was formerly believed that albuminous foods must be completely converted into true peptones before they could be absorbed, whereas it is now generally conceded that the liquefaction and the production of albumoses is really the essential step in peptic digestion, and I feel sure that we can assert with confidence that if we liquefy cooked starch and produce a reasonable amount of maltose, the rest of the starch being converted into the various dextrins as above stated, we have secured all the therapeutic results desired from the administration of diastase. This is why I would insist on the test showing the point at which free starch disappeared, and not the complete conversion of the starch into maltose.

As I have been engaged a considerable portion of my time during the last six years in studying and handling various diastasic preparations, I feel that I am in a position to present this subject from a practical standpoint, for I have found that my labors have been doubled by the confusion now existing in regard to the various methods of testing such products.

The pharmaceutic chemist should bear in mind always that the ultimate purpose of his work is to produce satisfactory preparations containing definite properties, and to get rid of all unnecessary technicalities and chemic circumlocutions, so as to make the qualities and purport of any preparation he may exploit perfectly clear to the medical practitioner, without any undue labor and investigation being expected on the part of the latter. It is just this careful work, on the part of the pharmaceutic chemists, that has produced such great strides in the development of and the purification and concentration of medicaments formerly handled in a crude and uncertain way. The wide-awake and conscientious practitioner fully appreciates this fact, and is always ready to give due credit for any accomplishment in this direction that enables him to the more readily relieve his patients of their ailments without offending their esthetic sense, and the gradual elimination of the cruder forms of drugs has at this time reached a remarkable degree of refinement. It is surely a long

step from an enormous dose of powdered Peruvian bark to a gelatin capsule of quinin, and even within a few years great progress has been made from the original nauseous and bulky pepsins, of only strength enough to digest a few grains of albumin, to the high power pepsins now produced without any special effort.

Another problem which should receive very careful attention is whether or not pancreatic extracts should be standardized by the same tests as vegetable diastase. I am convinced that, while we may get good results in certain cases from the use of pancreatic extracts, we can not depend on a definite diastasic action which is or should be similar to that of ptyalin, for we must remember that nature places the amylopsin of the pancreatic juice and the other various duodenal enzymes below the stomach, and they are intended more for completing and finishing the changes already begun by ptyalin before the peptic digestion supervenes. In other words, they are not intended by nature for beginning the conversion in the stomach, but act, we might say, on the food mass later, when it has an acid reaction, during the time it is being changed from an acid to an alkaline reaction, instead of on the alkaline or neutral mass when it is being changed into an acid condition, as is the function of the ptyalin, and therefore we should consider vegetable diastase supplementary to ptyalin, acting on the starch preliminarily and not secondarily.[1]

Should we not go still further and ask that a definition be made as to what constitutes a malt extract, so as to be able to make the proper distinction between the semi-solid malt extracts and their attenuations, which contain diastase, and the liquid malt extracts, so-called, which do not?[2]

102 West 93d Street.

DISCUSSION.

Dr. E. T. STEWART of Detroit—As this paper brings up a question of much importance, and brings before us the results of an extended investigation, I move that a committee be appointed, consisting of the Chairman of our Section and two other members, to suggest a practical test for diastase and to recommend the same to the Committee on Revision of the United States Pharmacopeia, and that the result of their deliberations be transmitted to the American Pharmaceutical Association for its concurrence. I have myself given considerable attention to the subject, and as a result of about three thousand tests made under my direction by Prof. C. C. Sherrard, a competent chemist, I may report that we found a great variety of methods in use and corresponding differences in the results. Active diastase has great starch-transforming power; for instance, a few grains are sufficient to convert all the starch taken in an ordinary meal by an adult in the period of less than a minute of time. Many of the preparations said to contain diastase have no starch-digesting power whatever. Everything depends, therefore, on the quality of the diastase, and some regulation is urgently needed so as to enable the physician to differentiate between the true diastase preparations and those which are falsely alleged to contain diastase.

Dr. F. R. STODDARD of Shelburne, Vt.—I am impressed with the importance of the positive determination of the digestive power of diastase and preparations which claim to have diastasic power, and of the necessity of the establishment of some uniform test by authority of the pharmacopeia. This is a question which should interest every physician who prescribes these remedies. The manufacturer, under present conditions, sends out these preparations, and the physician uses them, expecting them to fulfil the claims of the manufacturer and do a certain amount of work in the digestion of starchy foods, but at present he has no means of knowing whether these claims are true or false. I therefore heartily second the proposition that a committee be appointed to report on the feasibility of the adoption of a uniform test for diastase.

[1] Medical News, Feb. 6, 1897, p. 167.
[2] Boston Medical and Surgical Journal, Dec. 31, 1896, p. 669; Albany Medical Annals, March, 1895.

Dr. W. B. HILL of Milwaukee, Wis.—This is a question of great importance. It is a subject which should engage our attention as physicians who prescribe these preparations; and we should have better knowledge of their digestive or diastasic value. We need it especially, because the American people suffer from what may be called amylolytic indigestion, owing to a number of contributing causes. In the first place, there is so much starch in our food; and in the second, owing to hasty deglutition, there is a deficiency of ptyalin. There is, therefore, a great demand for diastase and preparations which assist in the digestion of starchy foods, and there is no doubt that some form of diastase will be introduced in the next pharmacopeia, and a higher test should be established and a standard be made before its introduction. It is well for us to take it up and give it due consideration at the present time, so that we may offer some well matured suggestions to the Committee on Revision, either at this or our next meeting.

Dr. F. WOODBURY of Philadelphia—The chemistry of the digestive processes is now so well understood by physicians that the form of dyspepsia characterized by deficient amylolytic power in the secretions is now generally recognized. As a result, physicians no longer prescribe pepsin for all conditions of imperfect digestion, but they differentiate the cases in which a starch-transforming ferment will afford the desired relief from those in which the proteid digestion is at fault. Therefore, measures to promote the secretion of saliva, and of the pancreatic and intestinal juices, are recommended, and there is a constantly increasing demand by the profession for starch transforming ferments. It is most important, therefore, that some uniform test should be formulated by the biologic chemists, which may enable us to distinguish between the physiologically active and the inert, or fraudulent, diastasic preparations offered to us by the manufacturers.

Dr. R. HARCOURT ANDERSON of New York—I would ask Dr. Fite as to the effect of increased secretion of gastric juice upon the action of diastase. Does hypersecretion and increased acidity retard or prevent the action upon starch? If so, what measures may be adopted to overcome this difficulty?

Dr. FITE—In reply to Dr. Anderson, I would say that an increase in the acidity of the gastric juice will retard the action of diastase in the stomach. In cases of hyperacidity, it is necessary to administer an alkali before the meal, and then by the use of diastase taken with the food, we can overcome this difficulty and relieve the symptoms. The reason why so many physicians have failed to relieve patients suffering from starchy indigestion is owing to the existence of this condition of hyperacidity and their neglect to administer the alkali before meals. It is, however, true that a moderate degree of acidity does not inhibit the action of diastase. Bicarbonate of sodium, in ten to twenty grain doses immediately *before* each meal, will be of great assistance to the action of the diastase taken *during* the meal.

Six years ago, when I first took up the study of this subject, diastase was practically unknown to a majority of practitioners, whereas now it is used to a great extent by physicians all over the world. The loss of saliva by tobacco-chewers, the defective mastication of food and the limited secretion in young children, with the great proportion of starch in our food, as pointed out by our Chairman, contribute to make diastase and its preparations prominent in therapeutics, and there should be some method of standardizing these products, or of ascertaining the real value of diastase by some practical and convenient test by authority, so that there should be some uniformity on the subject.

The Chairman, Dr. Hill, put the motion, which was adopted unanimously, and appointed to serve on the committee with him Dr. Fite of New York and Dr. Stewart of Detroit.

IMPROVED METHOD OF COCAIN ANESTHESIA.

A REPLY TO A KINDLY CRITICISM OF THE AUTHOR'S METHOD OF ANESTHESIA, BY J. F. OAKS, PH.C., M.D., PUBLISHED IN THE JOURNAL OF JULY 17, 1897.

BY P. L. ANDERSON, M.D.
CHICAGO, ILL.

The object of the new method is to avoid toxic effects, allay fears of patient, saving of time and cocain to both patient and surgeon, and incidentally to bring before the profession the fact that, in the prone position, patients recover from toxic effects of

cocain, and that if patient is cocainized in the prone position, and operated upon in the same position, there will be no toxic effects of the drug so long as that position is maintained. With this brief statement of facts from the original article I will reply to the Doctor's criticisms in the same order as he presents them.

The preliminary use of the one-tenth per cent. cocain spray solution is no essential factor in the ultimate anesthesia of the nasal mucosa; its purpose is merely to allay the hypersensitiveness of the mucous membrane preceding the application of the 25 per cent. cocain solution on a cotton wrapped probe. It is simply a nice, pleasant way of introducing a very disagreeable subject. To touch or rub the nasal mucosa with any foreign substance without some previous spraying of a weak solution of cocain causes a disagreeable tickling sensation, more or less pain, while a certain amount of fear takes possession of the patient's mind, which keeps him on the *qui vive* until the operation is completed. He is constantly expecting more trouble because he was hurt at the preliminary step of the operation. I use the Davidson spray tubes, and with the improved instantaneous cut-off, made by a firm in Port Huron, Mich., there is not the slightest trouble in controlling the amount of one-tenth per cent. solution to be used as an initial step. As to the strength of the solution of cocain used (25 per cent.), to be candid with the gentleman who so kindly criticises my article, I privately whisper to him (of course I would not say it to anyone else) that I have for two years used a 50 per cent. solution; but in writing for publication I think it poor policy to advocate such strong solutions to others, who might misunderstand my meaning or who, through carelessness or inexperience, might do much harm with such strength of solutions. Idiosyncrasies are so decided, sudden and rare that the difference between a 5 per cent. solution with tampon and 25 per cent. solution new method amounts to little or nothing, for as serious results have been reported from the use of 2 per cent., as well as 5 or 10 per cent. The demonstrated clinical fact is that less cocain is absorbed into the general system by this criticised method than is done by the weak solutions with the tampon method, theories to the contrary notwithstanding. In relation to the time required in ordinary cocain anesthesia I beg to refer to no less authority than Professor Ingals of Chicago. Dr. Ingals, in speaking of cocain anesthesia in Gould's year book of treatment for 1897 says: "For intranasal operations ten to twenty minutes or more is required for cocain anesthesia."

It might be of interest to learn that since the publication of the original paper, the author has in several test cases succeeded in producing complete anesthesia for acid or galvano-cautery in one and one-half minutes, using a 50 per cent. solution of cocain. The shorter the time required for anesthesia, the less is the toxic effect. In comparing the tampon method with the author's method, Dr. Oaks forgets that the tampon, in order to retain its position in the nose, necessarily presses just as much against the septum as it does against the turbinated body, which produces the absorption of double the amount of cocain required. Again, acid and galvanic cauteries cover but small spaces, sometimes a mere dot no larger than the letter O in the title of this article; often it is but a line, one-eighth to one-sixteenth of an inch in width, and from a half to an inch or more in length. It is not logical to contend or theorize that a tampon one-half to one inch or more in length and one-fourth to half an inch in width, in close contact with two or more parts of the nasal cavity, and remaining there for fifteen to twenty minutes, will produce less toxic effects than the application of a 25 per cent. cocain solution on a probe wrapped with just sufficient cotton to cover its metallic end, which can be accurately applied to only those parts to be gone over by the cautery. From my early experience in the use of the tampon method and 5 per cent. cocain, I observed that my patients speedily recovered from the toxic effects of the cocain by assuming the prone position. After the unpleasant occurrence of fainting during some six or seven septum operations, I have for the last few years anesthetized and operated for spurs, ledges and deflections of the septum with the patient in the prone position, and not once have I had the occurrence of the toxic effects of cocain, nor a case of hemorrhage that was not easily controlled in from one to three minutes by the use of hydrogen peroxid. The use of this drug as a hemostatic in intranasal operations was first brought to the notice of the profession by the author in an article on "Abnormalities of the Nasal Septum (*New York Medical Journal*, Feb. 23, 1895). Clinical facts must always speak stronger than mere argument or theories. While the improved method of cocain anesthesia is new to the medical profession, it has been in constant use in the author's practice for the last two years, during which time I have treated 2,114 cases and operated on 1,163 for intranasal disease. The method of anesthesia and the prone position of operations is not a fancied theory to be torn to pieces by mere argument; it is a solid, substantial clinical fact based on actual work done by the author, and capable of verification by records of cases and by Drs. Stuart Johnson, F. A. Leusman, G. H. McFatrich, T. Wilson Deachman, W. H. Weaver, Carl von Klein and many others who have on many occasions witnessed the anesthesia and operations of the author.

A STUDY OF THE CAUSE AND EFFECT OF URIC ACID IN DISEASE, WITH SPECIAL REFERENCE TO ALKALINE DRINKING WATER.

BY W. W. REED, M.D.
FOWLER, COLO.

I have been incited to an investigation of this subject by the great frequency with which I have met with cases of various manifestations of uric acid in the Arkansas valley, where the drinking water is almost universally impregnated with alkali, and where the people partake largely of a meat diet.

Since reading Professor Haig's little book, "Uric Acid in the Causation of Disease," I have become extremely interested in the subject, and find in it a wide field for study and investigation.

That the alkali water is in some way accountable for so many cases, I am fully persuaded, but in so far as I have ransacked the authorities and the literature on the subject, I have failed to find any satisfactory explanation of the phenomenon. In this paper I do not presume to advance anything new, but only offer a few facts gleaned from a study of my own cases and from a careful review of my library, on the subject. Some points have been entered into rather minutely, and many well known physiologic facts reviewed, but

this will be excused on account of the importance of the subject.

Of the seventy elementary substances known to chemists, only sixteen are found by chemic analysis to enter into the composition of the human body, and these, aside from oxygen, hydrogen and nitrogen, are not found free, but in compounds which go to make up the various tissues and the blood. These compounds naturally divide themselves into organic and inorganic.

The most important of the organic compounds are: 1, water, forming two-thirds of the entire weight of the whole body; 2, common salt, found in all the tissues; 3, phosphate of lime, largely entering into the structure of the bones and teeth; 4, potassium chlorid, which exists in the blood, nerves and muscles.

The organic compounds are subdivided into nitrogenous and non-nitrogenous, the former represented by the proteids, the latter by the carbohydrates and fats.

Hence, to enable an active, living human organism, constantly undergoing a loss of substance by the mechanical force exerted and the heat given off, to provide material to exert this force and repair worn out tissue, is the chief function of the food we consume.

The food must contain compounds of proteids, fats and carbohydrates, with water, that every constituent part of the body may be supplied with the necessary material for the performance of its function. In the digestion of these compounds a certain proportion of useless and indigestible material leaves the body in the form of water, carbon dioxid, urea, and certain unimportant saline compounds. The chemic composition of these compounds before entering the body as foods can be very accurately determined, as can the excretions; but the physiologic chemist is still puzzled over some of the intermediate chemic changes taking place during assimilation and absorption within the body. However, it is well known that in the vital processes, and metabolic activity, the fats and carbohydrates are broken down into simpler substances, and their unused carbon, combined in part with oxygen, is passed out of the lungs as carbon dioxid, while their hydrogen, combined with oxygen, passes out as water.

We are now interested more particularly in the study of proteid oxidation, its suboxidation, and its relation to the formation of the nitrogenous wastes, viz., urea and uric acid. Proteid oxidation differs from the oxidation of the fats and carbohydrates, in that some of its liberated carbon not only combines with oxygen to form carbon dioxid, while its hydrogen combines with oxygen to form water, but also some incompletely oxidized carbon and hydrogen remain, and combines with nitrogen and oxygen to form urea, which represents the chief nitrogenous waste.

In the processes of assimilation and nutrition, every healthy cell in the body not only takes from the food the material required for its immediate use, but lays by some little excess. In addition to this functional economy on the part of the cells, we find special food reserves or reservoirs within the body, from which the tissues can draw food substance. The oxygen reserve is found largely in the blood, and special storage of oxygen is rendered unnecessary, as it can be drawn from the air at any time. The two great storehouses of the body are: 1, the liver for the carbohydrates; 2, the adipose tissues for the fats. These supplies are drawn upon in the intervals between meals and during starvation.

As the proteids probably are but little concerned in energy production, and are only required to renew proteid waste in the tissues, nature has provided no storehouse for their excess. Proteids are not only oxidized after being organized into the tissues, but if taken in excess are oxidized without being converted into the tissues. Hence, to get rid of this excessive nitrogenous waste, which is brought to the kidneys in the form of the incompletely oxidized substance, urea, with its concomitant uric acid, is much more laborious to the system than to get rid of the carbon dioxid and water which are formed by the oxidation of the carbohydrates and fats. Here, as I take it, we have a key to the situation in the treatment of the uric acid diathesis: *i. e.*, to cut off proteids from the diet.

Accepting it then, as a demonstrated fact, that the progenitors of urea excreted from the body, are the proteids taken as food, and that urea itself represents the ultimate product of nitrogenous oxidation of the food and of the destructive metabolism in the tissues, the question naturally arises as to what intermediate steps are taken before the urea is excreted in the urine; and whether urea is finally formed in the kidneys, or merely separated by them from the blood.

A great deal of theorizing has been indulged in, regarding the antecedents and place of formation of urea, and the ideas and investigations of able men do not yet harmonize on these points. Murchison believed urea to be formed by the liver, and his views, until recently, were more widely accepted than those of any other writer. Garrod still holds, that the kidneys not only are concerned in its excretion, but also have to do with its formation. Cantoni, whose teaching the German and American writers accept, regards the living tissues as its direct source. Ebstein thinks it is formed, chiefly, in the muscles and bones. Thus it will be seen that our physiologic knowledge is such, that we are not in a position to draw safe conclusions even yet on these questions, but notwithstanding this diversity of opinion, certain facts that may guide us in our meager investigations, have crystallized out of this chaos.

We learn that the muscles contain by far the most proteids of any tissue in the body, and so naturally look to them for a solution as to the origin or source of urea.

Clinical analysis shows that they contain no urea proper, but that they always contain kreatin, which is a substance known to be directly intermediate between proteid and urea.

Kreatin is also found in the brain and nervous system, in the spleen, and in many glands. Since it belongs to a group of nitrogenous compounds, which the body is unable to utilize for reconstruction into proteid, but must be gotten rid of, it seems quite probable that it is the first step in the chemic decomposition of the proteid tissues, toward urea. Kreatin is soluble, and readily dializable, and therefore fitted to pass rapidly into the blood stream. The blood always contains urea, but it is doubtful just where the kreatin is changed into urea. On the whole, the evidence seems to show, and it seems to be very generally conceded too, that it is only separated from the blood by the kidneys, and is not produced by them. Blood from the renal artery contains more urea than blood from the renal vein, which would not be the case, did the kidneys produce the urea. Moreover, we can find no sign of any special activity of any group of tis-

sues, either in the liver or kidneys, such as one would expect to find, if the urea always came from the breaking down of formed tissue cells. In suppression of urine it is also found, that urea accumulates in the blood, which would not be the case, unless it was normally formed elsewhere, and carried off by the kidneys.

Urea itself, is, as we have seen, normally found, both in the blood and the urine, and may vary widely in amount, depending upon the food and the metabolic activity, within a physiologic limit.

By virtue of the fact that it is a neutral substance, unirritating and readily soluble, it is constantly drained off by the kidneys, but not so with its copartner in human misery, uric acid.

Uric acid being much more insoluble, and forming many insoluble salts, and also owing to its irritant action on the vasomotor system, is extremely liable to be retained, and may become a potent pathologic factor in the causation of many diseases, where faulty elimination occurs. Like urea it is a product due to deficient nitrogenous oxidation, and also has an imperfectly understood pathology. Garrod and Liebig suppose that uric acid is an early stage in the transformation of urea. Hoffman believes, that it is formed from the decomposition of the urates, and Haig, whose ideas and investigations have recently revolutionized the whole subject, teaches that uric acid and urea have the same antecedents but that uric acid is not formed from urea, but concomitantly. In his experiments he has shown that it is formed in the system in the constant and direct ratio, of 1 to 33, *i.e.*, for every 33 grains of urea 1 grain of uric acid punctually forms.

Before entering into the consideration of the elimination of urea and uric acid, let us recall for a moment the minute anatomy and physiology of the kidney structure. It is made up of peculiarly arranged tufts, of very small arteries called glomeruli; these are enclosed in the finely constructed cellular capsule of Bowman, and this capsule is held in a fibrous envelope or capsule of Malpighi, the continuation of which constitutes the contorted uriniferous tubule. Into the summit of each capsule of Malpighi, one of the ultimate branches of the renal artery enters (the afferent vessel) and breaking up into a capillary network, forms the glomerulus. The blood is carried away from this glomerulus, by a small vein (the efferent vessel), which does not at once join other veins, but breaks up into a capillary network, which surrounds the adjacent uriniferous tubule. By means of this mechanism, a thin stream of blood constantly flows through the glomeruli, only separated from the excreting tublule by a very delicate membrane—the wall of the capillary vessel. The Malpighian capsule has been regarded as a funnel, and the membranous walls of the glomeruli as very delicate filtering paper, into which the blood is poured. The mechanism of the renal secretion, is then seen to consist of two distinct parts.

1. The glomeruli through which the filtration of water—dehydration of the blood—takes place.

2. The active secretory apparatus, consisting of the secreting cells of the capsule of Bowman, and those of the uriniferous tubules, which have to do with the removal of urea. Normally the organ is abundantly able to perform both the functions properly.

The blood which supplies the kidneys, is brought directly from the aorta, by the renal arteries, so that it has but recently left the heart. The venous blood propelled to the lungs is there purified of its carbonaceous waste, but the nitrogenous waste remains, so that the arterial blood in the aorta is pure, only as regards carbonaceous waste, but impure as regards nitrogenous waste. In the normal condition, the walls of the minute renal arteries and veins are relaxed, and the passage of blood is very free, with a profuse urinary flow, while but little of the nitrogenous waste is allowed to re-enter the blood current. Hence, strictly speaking, the blood that leaves the kidneys, is the purest blood in the body, but not infrequently, certain pathologic conditions arise, whereby the opposite obtains, and the urinary flow becomes scanty while the secreting cells of the kidneys fail to remove from the blood, a part of the nitrogenous waste, and it re-enters the blood stream, and becomes a pathologic factor as a result of this faulty elimination. Professor Haig believes, that where the physiologic oversteps the line, and becomes pathologic, there is a defective elimination by the kidneys, rather than an excessive formation of the uric acid, and by numerous and accurate tests he has demonstrated, that its elimination is regulated by the degree of alkalescence of the blood. That is to say, that under normal alkalescence, the uric acid is conveyed to the kidneys, in a state of solution, and eliminated as fast as formed; but in conditions where the alkalescence of the blood is diminished, uric acid and its salts are not so readily held in solution, being very insoluble, and demanding a highly alkaline medium to effect complete solution. Hence, imperfect elimination must follow a lowered alkalescence, allowing an accumulation in the blood. The degree of alkalinity of the kidney structure probably determines, to some extent, how much shall be excreted, and how much retained?

That Professor Haig's views of the pathology are true in the main, I would not presume to question, but under certain environments, with a heavy nitrogenous diet and a continuous ingestion of an alkaline drinking fluid, as is the case with my *clientèle*, it seems quite probable (from my own observation) that an excessive formation also enters largely into the pathogenesis. As the alkalescence of the blood is liable to fluctuation, from so many causes we may have uric acid retention in varying degrees, in which case it may be again carried back into the circulation, and from the blood be precipitated into the fibrous tissues, joints or muscle sheaths, giving rise to rheumatism or gout; or by its irritant action on the vasomotor system of nerves which control the caliber of the blood vessels while circulating in the blood, a rise of arterial tension with a contraction of the arterioles, may occur. Among others, the arterioles in the Malphighian tufts contract, and the urinary excretion is thus greatly decreased. This state of affairs soon brings about a condition of general toxemia, which may give rise to various neuroses. The nerve centers being most susceptible to the irritant action, are the first to feel the deleterious effects of the toxic state, and those organs that are constantly under nerve control in their function, manifest the earliest symptoms. It is now almost universally believed that migraine, epilepsy and chorea are due to this effect of uric acid on arterial tension. In fact all diseases of uric acid origin except gout and rheumatism, are consigned to this category.

We have then two prominent factors in the creation of uric acid diseases.

1. An excess of uric acid in the blood acting as an irritant.

2. An increase in blood pressure from vasomotor spasm, producing a strain on the heart, and causing a hyperemic engorgement of the blood vessels, in the brain, liver, kidneys, etc. As a matter of fact, this process may not stop with simply an hyperemia, but inflammatory changes in these organs not infrequently result. In this relation, it is lately being assumed, by good authority, that albuminuria and glycosuria owe their pathology to this effect of uric acid. That endocarditis, pericarditis, endarteritis, pleuritis, etc., are of uric acid origin has long been an accepted fact.

Now assuming the correctness of Professor Haig's conclusions (and all late practical experience admits that they are true), and using his data, at first glance it seems rather paradoxical, that alkali water could give rise to uric acid diseases. Nevertheless, I have been forced by tracing its origin in so many cases to the firm belief that this is the case. As the pathogenesis of uric acid is, as we have seen, still somewhat obscure, I shall not presume to offer an infallible explanation of this phenomenon. Yet I have worked out an explanation, that seems reasonable and to me accords best with Haig's investigations and my own observations. It is briefly this:

That a free consumption of proteid diet and deficient oxidation of the nitrogenous material generally gives rise to an excessive amount of uric acid. This, by its irritant action on the arterioles of the kidneys, bring about an increased arterial tension there, and consequently diminishes the urinary flow. As a result of this all the uric acid is not eliminated. The alkalinity of the blood being kept high by the constant ingestion of alkali in the water, uric acid is not allowed to leave the circulation, and becomes deposited in the tissues, glands, joints, etc., neither can it be completely eliminated because of high arterial tension in the kidneys, etc., but it is carried round and round in a vicious circle that keeps the arterial tension high and is thus productive of the many evil consequences, the most notable being those of the nervous system. The symptomatology of uric acidemia may be so various in its manifestations, and depends so greatly upon the *locus minoris resistentiæ* of the patient, that to enter upon its discussion would protract this paper to an undue length.

Professor Da Costa, in an article in the *Journal of the American Medical Sciences*, 1881, on the "Nervous Symptoms of Lithemia," has graphically pictured the mental condition of these cases when he says:

"There are spells of languor and lassitude which befall the man whose blood is charged with lithic acid, in which all exertion is painful and which strangely contrasts with his usual energy. Then there is depression of spirits, and gloom that may amount to melancholy. But above all is irritability of temper; odors annoy, sounds infuriate; nothing pleases and it requires more than ordinary self-control to prevent explosions of temper. The man is on edge, and the acid blood literally makes an acid temper. Indeed many a man who has the reputation of being a crank is simply a lithemic, who finds it impossible to control his engendered irritability."

Again the irritating influence of uric acidemia, on the temper, and its magical disappearance, and consequent production of gout, as a result of its deposit in the joints, is typically illustrated in Macaulay's description of the Earl of Chatham: "A cloud settled on him, he, a most affectionate father could not bear to hear the voices of his own children. He bought up houses contiguous to his own, that he might not have neighbors to disturb and annoy him with their noise. His appetite was fanciful and capricious, he was melancholy and irritable. The disputes of his colleagues, the responsibility of state bewildered this boldest of men, who behaved at times like a hysterical girl, bursting into a flood of tears. He had passed months without a twinge of the gout to which he had been subject since boyhood. At length the gout returned, his nerves were newly braced, his spirits became buoyant, he was once more the proud resolute statesman."

Again, Haig, in a quotation from *Punch* aptly illustrates the seeming trivial circumstances which the mind of the lithemic will seize upon, as a cause for worry. A middle aged man is represented as reclining in an easy chair, in a luxuriously furnished sitting room and surrounded with all the comforts of life. It is afternoon. On the floor near him is lying his dog, resting with half an eye open. But this man in spite of all his luxury and comforts is not happy, and the cause of his misery is the uncomfortable thought which has gradually forced itself upon him that his dog does not love him. Presently he arouses himself sufficiently to call his dog with the object of putting to the test the cause of his misery, but the animal rushes to him and evinces such evident pleasure and affection that his master is soon compelled to abandon the idea, that his dog does not love him. The man who is thus unable to make himself believe that his dog does not love him is still unhappy and he rushes to the other pole, and begins to worry himself, because he does not love his dog. This is more difficult to disprove and Punch intrudes no further upon him. There is no doubt whatever that these descriptions are drawn from nature for I have seen just such cases and they well illustrate the symptoms of uric acid sufferers, and point out conclusively, that the cause of the misery is central, *i. e.*, the circulation in the brain. The inference is, that in all cases characterized by recurring and persistent headache, irritable temper, aversion to mental or physical exertion, with a scanty urinary secretion, uric acid should be suspected and a careful and systematic analysis of the urine should be made. As we have seen, acids, or any drugs acting as an acid, by causing a lowered alkalinity of the blood, will clear the blood of uric acid, thus relieving headache, lowering arterial tension, etc., but by so doing, the uric acid is drawn into the fibrous tissues and joints, and may precipitate an attack of rheumatism or gout; therefore, where it is desirable to relieve the headache and lower arterial tension, etc., quickly by giving an acid the salicylates should follow in large doses to effect its removal from the system. As a matter of course the proteids must be restricted, to cut off the amount of uric acid introduced into the system.

Animal food, rich soups, strong coffee and tea, should be studiously avoided by all lithemics. To clear out the uric acid after an attack of rheumatism has already developed, the salicylates are indicated.

It is impossible here as in all other diseased conditions to work out a plan of treatment that will fit all cases, as each case differs from the other.

No subject in medicine merits a more careful study today and none offers a wider field for investigation than this problem of uric acid as the causation of disease. Professor Haig goes so far, in speaking of its importance as to say:

"If my premises are good and my deductions sound and if uric acid really influences the circulation, to the extent which I have been led to believe that it does, it follows that uric acid really dominates the function, nutrition and structure of the human body to an extent which has never yet been dreamed of in our philosophy, and in place of affecting the structure of a few comparatively insignificant fibrous tissues, in which it is found after death, it may really direct the development, life, history and final decay and dissolution of every tissue, from the most active glands to the matrix of the nails and the structure of the skin and hair."

SURGERY ONE HUNDRED YEARS AGO.

AN HISTORICAL STUDY

BY DR. GEORGE FISCHER.

DEDICATED TO THE GERMAN SURGICAL ASSOCIATION.

TRANSLATED FOR THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION BY CARL H. VON KLEIN, A.M., M.D.

(*Continued from page 380.*)

Sometimes they were obliged to move the entire hospital, if the location was not safe enough, for the enemy had no respect for them and knew no neutrality. Schmucker with his hospital in Schweidnitz was captured by the Austrians and discharged on parole only after five days. Theden was also taken in 1744 with his whole equipment for the first time, and by the Austrian hussars in the battle of Leuthen, and remained a prisoner the entire winter. He met the same misfortune at the overthrow of Hochkirch, whereupon the king paid him 300 thalers for his loss and gave him free medicines for the following campaign. Again in 1759 he was captured in Poland by the Cossacks and held for several months, being well treated in the meantime. In the next chapter we shall listen to a few German voices which were raised in favor of the neutrality of the hospitals. Very few figures are available on the subject of mortality in the hospitals. We will save Bilguer's data for the last chapter on gunshot wounds. At one time 15,000 sick and wounded passed through his hospital, of which number about 1,500 died. During the whole campaign this hospital had cost 9,684 thalers, besides nearly sixteen groschen for medicines for each patient.

The prophecy of Frederick the Great, that after his death evil tongues would have their way, found fulfillment in respect to the field-hospitals. A pensioned Prussian general wrote in 1787 concerning the battle of Torgau as follows: "The greatest part of the wounded lost their lives through the intense cold, which was the usual fate among the Prussians where the hospitals were so badly constructed and so ill smelling that every soldier looked upon himself as already dead as soon as he entered one of them. The physicians and surgeons in the hospitals had orders to let all those die who were so wounded that they could not serve again after their recovery, in order to save the cost of their maintenance." Perhaps the general meant to reflect on the admonition of his king who had called to his surgeons: "Do not make me too many cripples," but had taken pains to provide excellent invalid hospitals with the greatest solicitude for the rest of the cripple's life. Of course it can not be denied that in the course of the many wars some abuses had crept into the Prussian system of military sanitation, so that Frederick William II. found sufficient material for reorganization. As before mentioned he placed the system of field-hospitals under a special department of the newly erected chief bureau of war (or war ministry which had not existed under Frederick the Great). Then he improved the station of the military physicians, liberated them from the razor and the broad sword, and a year after the death of Frederick the Great, in 1787, made them a part of the new dispensation in field-hospitals based upon the plans of Dr. Fritze, which left nothing to be wished for in respect to care of the wounded. Out of 100,000 men they estimated about 10,000 sick, and for the whole army in war time allowed four staff physicians and eighteen field-physicians, thirty staff-surgeons, forty over-surgeons and 600 under-surgeons. Besides these there were provided two chief field-apothecaries, four provisors or traveling apothecaries, forty under-apothecaries and ten assistants. The attendants were semi-invalid soldiers who were married, and five of them were allotted to each 100 sick with internal diseases, and ten were allotted to every 100 surgical patients.

A few years later new improvements appeared in Prussia. In 1793 the general staff-surgeon Görcke called the field hospital into existence, a portable hospital for 1,000 sick and wounded, which according to an order of Frederick William II. was built in six weeks. These portable hospitals were easy to establish and immediately proved their value in the siege of Mainz. Görcke had for a long time entertained the plan of a comprehensive military medical training-school, which was now realized in the year 1795, when the *Chirurgische Pépinière in Berlin* (Surgical Nursery) was founded. It was at first designed to admit and to train a surgical hospital force of fifty men who were not at that time to be lodged with the army.

In 1797 the institution was considerably enlarged, obtained a building of its own and was then to admit company surgeons, to give a better training to those already at hand and to create a good supply of surgeons for the field hospitals. Under the control of a lieutenant-general the general staff-surgeon as director conducted the institution, admitted the students and later gave them appointments; he was represented by a chief staff-surgeon. Of the four staff-surgeons one had oversight of those students who were ordered to the Charité, while the others took their part in the scientific training in the institute. The real governors were the chief-surgeons, eight in number, who attended the students in the colleges and controlled their time, their military apparel and their dinners, which were taken in common, etc. For the most part the earlier students at the Pépinière were promoted, after an examination before the Collegium Medico-Chirurgicum to staff surgeons and regimental surgeons, in about twelve to fourteen years. The number of the students was fixed at eighty-one, aside from an indefinite number of volunteers, who might be foreigners, and that included a number of company surgeons who came to Berlin to study. Before their acceptance the applicants were obliged to agree to serve at least eight years. Every half year nine of them were sent to the army and the same number of new ones taken in. Each one remained in the Pépinière four years and a half; during that time he heard every course twice and received six thalers monthly besides free residence. Besides instruction in the German, Latin, French and Polish languages, in pure and applied mathematics, logic, ethics, history and geography, the professors of the Collegium Medico-Chirurgi-

cum gave theoretic instruction in all the medical sciences. There followed a half year's practical service in each position in the Charité. The Pépinière possessed a library, a collection of anatomic specimens and medicaments, an herbarium, etc. The students were appointed as company and squadron surgeons, and later were promoted either as over-surgeons of the institution or as surgeons of the guard, or regimental surgeons. They could also be appointed as district surgeons or enter the civil service, as they wished. The founding of the Pépinière was for that time, when medicine and surgery were still separated, a progressive step, for both sciences were taught there, but a free scientific spirit could not develop there under the strict discipline. In 1818 it became the Medico-Surgical Frederick-William Institute.

Among the *military surgeons of Frederick the Great*, whom we shall now notice more closely, the great mass were wholly uneducated. Everywhere they were still obliged to appoint barbers' men and barbers' journeymen as army surgeons, who had to shave the soldiers and officers, whose most intimate associates were under-officers and common soldiers, whose most frequent vice was drunkenness. If they indeed found opportunity to listen to their colleagues in Berlin, whose institutions for anatomy and surgery at that time had a great reputation in Germany, yet the regimental surgeons had to bestow an inconceivable amount of labor on their education, which was in accordance with their duty, for all ambition and all school training were lacking. Upon how low a plane of surgical training the army surgeons were, is shown by certain observations noted in 1754 by Muzell, the physician of the Charité. When a pair of scissors penetrated a musketeer's buttock, and excessive bleeding with swelling followed, Muzell advised a dilatation. As the army surgeon could not trust himself to do it, the physician was obliged to do it himself, "probably the severest case he had ever had, and one which required real resolution." Deep in the wound, he found an aneurysm and saved the patient by ligature, not as he supposed of the art. obturatoria but of the art. ischiadica. This ligature is the first made on the last named artery, as I have shown in my work on wounds and aneurysms of the art. glutea. Another regimental surgeon was not in condition to stop an usual flow of blood after the extraction of a tooth, which Muzell accomplished by pressing a sponge into the gap left by the tooth. At one time when gangrene followed an amputation of the forearm, made on account of caries of the hand, Muzell saw the only safety in exarticulation of the humerus, but his salaried surgeon advised against it from fear of the bleeding that it would occasion. Nevertheless it was done. Several days were spent in extracting the bone because they introduced a compressed sponge and let it remain for a long time in order to somewhat separate the head of the upper arm from the shoulder cavity; the patient recovered. This kind of cases, which show clearly the melancholy condition of army surgery, might easily be multiplied. The complaints over their scanty training were so general that Surgeon-General Theden decided to write a book on "Instruction for the Under-surgeons of the Army" (2 vols., 1774). This is said also to have been the guide according to which the master trained his apprentices, since the handbooks of Platner and Ludwig were quite beyond the comprehension of the barbers. Unfortunately in that work the elements of anatomy and physiology were treated so briefly and impracticably that the army surgeon could learn nothing from it. What idea could he get of the frontal bone, for example, when Theden taught him that os frontis had two areas or surfaces, an inner concava (hollow) and an outer convexa (rounded), and various margins or edges, etc. They tormented the students, especially in anatomic studies, quite too much with dry names and figures, which were quickly forgotten again. In 1783 Bilguer published "Directions for Field Surgeons" as everything that had hitherto been written on field-hospitals had been the product of the pens of learned gentlemen who had never participated in a campaign. But when it is seen how minutely and carefully Bilguer treats the subject of gunshot wounds with respect to the direction and shape of the wound and the location of the foreign body, describing the incision in each particular case, it will be understood that the army surgeons worked only from memory and not with talent.

Even at the end of the century, in 1791, Bilguer wrote: "It is well known that on account of the low wages of the under-surgeons in the regiments [the under-surgeons received at that time 4 thaler 3 groschen monthly, and 21 groschen additional from the regiment surgeons, while the Hanoverian squadron or company surgeons received 6 thalers monthly], and the severe military discipline, but few devote themselves to this hard service, and those who do so are usually men who have had no moral training and still less education, and most of them come from the lowest class of society. If the state would see to it that only well-behaved young men with education and a good moral character should devote themselves to surgical science, then the regiments and the provinces might be provided with skilled surgeons and not with privileged murderers; but the state would be obliged to pay these useful and indispensable men better and to respect them more." Richter was right in asserting that a field surgeon who must be told in every particular case how to act, who did not understand how to use his own judgment in applying a general rule to particular cases, was not at all warranted in being a surgeon. If there were any excuse for the ignorance of the under-surgeons it lay in the circumstance that their superiors, the regimental surgeons, frequently knew nothing, although the surgeon-generals often gave daily surgical lectures while in winter quarters. We will not leave the Prussian army surgeon without learning how he looked. For that purpose our poet Schiller shall don the uniform; for the Würtembergers were dressed out in the old Prussian style, which was very stiff and absurd. When Schiller was an army surgeon, in 1780, without the decoration of the sword tassel, having only the rank of sergeant, and with a yearly salary of 216 guilders besides about 36 kreutzers daily, he wore on each side of his face three stiff rolls of plaster of Paris which looked like curls, while a small military hat scarcely covered the crown of his head. A cue hung down his back and a horsehair band encircled the long neck. Felt was worn under the leggins so that the legs, like two cylinders, had a greater diameter than the thighs compressed by tight breeches. As Schiller, in leggins very much spattered with shoe-blacking, could not bend his knees properly, he walked like a stork. In Hanover the squadron or company surgeon in the dragoons had to wear a green, in the infantry a red, and in the artillery a blue uniform.

The leading Prussian war surgeons, at the same time with Richter and Siebold the best surgeons in Germany, were Bilguer, Schmucker and Theden. Yet we must confess with shame that even in these men there was lacking a genuine scientific depth, and many of their works are today scarcely worth reading. The most talented among them was *John Ulrich Bilguer* (1720–1796) of Chur in Graubünden, where his father was guildmaster. After his departure from the gymnasium he studied in the University of Basel and then spent four years in Strassburg, where he lived with the anatomist Vaquin, on whose advice he devoted himself entirely to surgery. Taking his place among the Strassburg surgeons he began to practice, and went to Paris for further training. He was now offered the position of surgeon-major in a cavalry regiment which the Duchess of Wurtemberg was raising. After an examination in Tübingen he began his duties; but in the following year (1742) he went with the regiment, which had been turned over to the king of Prussia, to Berlin, in order to be again examined by Eller and Schaarschmidt, and then be confirmed in his position. Bilguer did not allow himself to lack in courtesy to his French colleagues; originally he wrote his name Bilger, but for their sake he afterward inserted a "u" so that they might pronounce his name properly; but what educated German was at that time without French affectations? In 1744 and 1745 the war took him to Bohemia and Saxony and promoted him to regimental surgeon. After the battles of Kesseldorf, Prague, Rossbach and Leuthen he continually had large hospitals to direct, especially in Dresden and Breslau. When the surgeon-general Boness, successor to Holtzendorff, died, Bilguer received his place. After he had erected the field hospitals in Liegnitz, Jauer and Striegau for the siege of Schweidnitz, he accompanied the army of Prince Henry and later that of the king. After the battle of Kunersdorf, where the supervision was incumbent upon him, he was ordered to Stettin with a large transport of wounded (among them ten generals and over 400 officers). In 1760 he worked in Torgau. He was greatly pleased with the doctor's degree which was conferred on him by the University of Halle (1761) for his dissertation on "The Discussion of the Very Rare Use of, or the Almost Total Avoidance of the Amputation of Human Limbs." This work on amputation, which he wrote in Latin during a four weeks march and amid the greatest disquiet, was published in the same year in German, and within a very short time made Bilguer famous in European surgery.

He was even more famous among the French than the Germans after the celebrated Tissot in 1764 conferred on the book the great honor of translating it into the French. His glory increased when an English and later a Spanish translation followed, based on Tissot's edition, for the proud Briton did not concern himself much with the Germans. The work was one of the few skyrockets which German surgery sent up during the eighteenth century; it flamed all the more brilliantly because Bilguer dared to directly contradict the views of the Académie de Chirurgie, and so caused an enormous sensation. Men like Pott, John Bell, Kirkland, Morand, Martinière, Gesscher. Bertrandi and Schmucker felt moved to subject the maxims laid down by Bilguer to an exhaustive criticism. The author had not imagined that his work would win general applause from the learned physicians and surgeons as "he did not feel himself strong enough to write for the present age" and latter confessed that he had suffered from jealousy and prejudice until Kirkland came to his aid. A year after this publication Bilguer became a member of the Society of Science in Göttingen, of the Roman Royal Academy of Scientists; of the Academy in Erfurt; and a Master of Wittenberg. The winter of 1762 found him in the quarters at Torgau and Leipzig, where he gave daily and free surgical lectures to the surgeons, which formed the groundwork of a new book, "Guide to Surgery in Field-Hospitals" (1763). This work was dedicated to Prince Frederick Henry of Prussia and among other things was enriched with 126 medical and 132 surgical formulæ; this also was translated into French. As Bilguer had served in the hospital with Surgeon-General Theden after the attack on Freiberg, he turned back to Berlin, on the the conclusion of peace, in order to publish his "Surgical Observations" (1763). This contained notes made by him and by various "industrious and observing hospital army surgeons" during the Seven Years' War, and found favor in the eyes of the British. There followed some very thick volumes; "Information for the Public in Regard to Hypochondria" (1767); "Medical and Surgical Questions in the Injury to the Skull" (1771), suggested by the wound of a superior officer of whom the King had said that only centuries could produce such a man. In this there was chiefly discussed the diagnosis and treatment of concealed fractures, fissures and extravasations. Then appeared "Experiments and Results with Putrid Fever and Dysentery" (1782), and a practical "Guide for Field Surgeons" (1783). Toward the close of his life, 1791, after he had served fifty years, taken part in twelve campaigns, in nine of them as surgeon-general and three as regimental army surgeon, he wrote his last work: "Recollections for Sketches on the Enlargement of Medical and Surgical Knowledge, Together with a Treatise on Cynic Spasm in Case of Wounds." He had earlier been appointed court physician to the Queen and in the year 1794 was enobled. He died two years afterward. Bilguer enjoyed a great reputation and in the translation of his works was a marked exception among German surgeons. Nevertheless, in the best years of his life he possessed so little self-confidence that he asked "some learned, experienced and celebrated physicians" whether his works deserved to be printed or not. His "Restrictions on Amputating" was an eminent scientific achievement, and if he with a too one-sided courage in almost entirely discarding it, shot far over the mark, yet therein lay the starting point of our conservative surgery of today. Bilguer showed here and there an excellent insight, which must, however, be deciphered out of terrible German.

The other surgeon-general *Johann Leberecht Schmucker* (1712–1786), received his first instruction in the collegium medicochirurgicum and from Eller, Buddeus and Senff in the Berlin Charité. Appointed to the tall grenadier guards he was sent to Paris as salaried surgeon for two years, at the expense of King Frederick William I. Here he studied with Petit, Morand, St. Yves and especially with le Dran, with whom he became intimate, and to whom he owed most of his surgical knowledge. The first patient whom le Dran turned over to him suffered from stone; he operated for it, and indeed, according to the order of his teacher before a large audience; moreover, he was obliged to maintain the patient at his own expense

until his recovery. Le Dran taught his pupil the wise lesson never to follow slavishly in his studies the opinions of individual scholars, and always to hold truth higher than the authority of any man. Schmucker visited the Hôtel Dieu or the Charité daily, where he saw very many operations performed. On his return from Paris he was appointed in 1739 regimental surgeon in the Sydow infantry regiment; in 1749 to the regiment of the guards in Potsdam, and finally, under Frederick the Great, he was made first surgeon-general and director of the surgical field-hospitals. He made eleven campaigns and was active in almost every battle of the Seven Years' War. "A drachm of experience outweighs many pounds of brilliant theories;" according to this principle Schmucker followed his science, and he wished too that in all medical institutions the students at once begin their study in the hospitals, because all theoretic knowledge in advance of practical, however necessary it may be, avails nothing. However, if the causes of certain appearances lay entirely in the dark he would seek to elucidate them by hypothesis, because by means of this so often neglected philosophy, the science of medicine would make very much greater progress. The time was as yet far from ripe for a system. Medicine and surgery were for him closely bound together and of equal value, so that the strife for the precedence of the one or the other seemed to him very ridiculous. While he censured the prejudice, superstition and credulity of his time, he himself still believed in the "mad-worm" of dogs, and recommended the cutting out of a tendon as a preventive of madness.

Schmucker had a large practice, but in his whole life he performed only seven castrations and twelve lithotomies, only one of which proved fatal. When he boasts of having operated gratuitously on poor patients and having maintained them at the same time, and says that he felt richly repaid by their silent gratitude, and the consciousness of having relieved much misery and brought back happiness and joy to a disconsolate family, this information would sound better from the mouth of another than from his own. His fame was wide-spread. Indeed his most celebrated patient was the court physician Zimmermann, who traveled from Hanover to Berlin on the advice of his friend Meckel, especially to be operated on for hernia by Schmucker. Schmucker's best friend and colleague, as he called surgeon-general Theden, assisted him in this operation. To be sure, full of jealousy Theden, when both operator and patient were dead, related that Zimmermann had previously applied to him in Stettin for the operation. Then when Schmucker was to perform the operation and Theden to assist, the latter asked his principal how the operation was to be performed and recommended his vulnerary water, to which Schmucker replied in an unfriendly way. Under dry bandages recovery followed within thirteen weeks after much suffering, which Theden said would have certainly come to pass with his vulnerary water in five or six weeks. Schmucker's greater experience was very gladly conceded by A. G. Richter, who honored him as one of the most skilful and expert surgeons in Germany. He never omitted a dissection in special cases and kept an accurate day-book of all important cases. Since he felt himself unable to carefully observe all the wounded after a great battle he turned his entire attention during one campaign to certain injuries, and with this in view had as many as possible of those having the same kind of injuries laid together. At the siege of Schweidnitz he did this with injuries to the head, and later, in order to test hemlock for cancer, he had thirty sick with scirrhus brought from all the hospitals in Breslau into his hospital. He took no pride in operating quickly; he valued safety more highly. Yet, as a man 70 years of age, he operated with a quick hand and a good eye. After he had performed many difficult operations with success he at times in operations for hernia still feared the criticism of old physicians, who frequently out of jealousy sought to destroy the reputation of their younger colleague.

He upheld warmly the simplifying of instruments. Although in his time much was improved, much that was useless was abolished; the large inconvenient bistouries for the dilation of wounds were made smaller; a scirrhous breast gland was extirpated with a small knife, instead of with an enormous kitchen knife the very sight of which made the patient tremble; the instruments for trepanning and lithotomy were much improved, yet they still kept the great awkward things for amputations. A surgeon who was not especially skilful could scarcely control these frightful amputating knives. Schmucker had them made only five or six inches long but curved like a bow and the handle of the saw was smooth, without any of the ornamentation by which the old saws were rendered so cumberous. He had the entire apparatus for amputating packed so conveniently that it could be easily carried with him in the field. It is difficult to reconcile his usually somewhat exaggerated humane sentiments with the fact that he kept secret the composition of an eye wash, and that "he did not know that a physician could be blamed if he withheld such a remedy, of whose efficacy he had convinced himself by many successful experiments. If the public were more justly disposed toward physicians every upright man would find such a reservation unfair. Meanwhile I have the example of other great physicians before me." Yet the search after novel and strange things which distracted so many, was abhorrent to him; he did not adopt new remedies and methods in the first heat of their discovery, but waited till time proved their merit.

As was usual in that time, his friends first had to persuade him to write; literary fame had no charm for him. He was honest enough as an author to accuse himself of some negligence, since most of his notes were written in the field-hospitals amid the disquiet and hardships of war, and afterward his many duties would not permit him to add any finishing touches. Schmucker was very truthful and tried to report his cases as faithfully and accurately as possible, in the belief that careful and correct observations would retain their value for all time. Therefore he omitted all learned ornamentation, but made the mistake of purposely avoiding every *raisonnement*, in order to leave that entirely to the reader. In his 70th year he feared that his works were written without fervor and charm and was willing to lay down his pen whenever the public should give him the hint. He was already first surgeon-general when he entered on the career of an author with his "Surgical Perceptions" (2 Vols., 1774). The first part contained fifty observations on injuries and diseases of the head. The introduction of cold water applications in wounds of the head secured to him the gratitude of posterity and has made his name immortal. In the second part

injuries and diseases of the breast, abdomen and extremities are treated, chiefly gunshot wounds in the lungs, cancer of the breast, radical operation for hernia, hydrocele, lithotomy, amputation, conservative healing of gunshot fractures, etc. From the point of view that progress comes about more quickly through united forces and in order to join the Prussian military physicians together more cordially and to stimulate them to scientific work, Schmucker published some miscellaneous "Surgical Essays" (3 Vols., 1776–1782), into which are collected 135 observations, partly made by himself, partly by regimental surgeons. These, after the manner of their chief, submitted almost entirely bare reports of cases without any epicrisis. He himself published in the collection papers on amputation, the use of the leeches, black cataract, coagulation of milk, hernia, cevadilla seed, etc.

(To be continued.)

SOCIETY PROCEEDINGS.

American Association of Obstetricians and Gynecologists.

Proceedings of the Tenth Annual Meeting, held at Niagara Falls, N. Y., Aug. 17–20, 1897.

FIRST DAY—MORNING SESSION.

The Association met at the Cataract House under the presidency of Dr. JAMES F. W. ROSS of Toronto.

An Address of Welcome was delivered by Dr. W. R. CAMPBELL of Niagara Falls, which was responded to by the President.

The first paper was read by the Secretary of the Association, Dr. WILLIAM WARREN POTTER of Buffalo, entitled

PUERPERAL ECLAMPSIA WITH SPECIAL REFERENCE TO TREATMENT.

The author, at the outset, referred to the views advanced by M. Charpentier at the Geneva Congress last year relative to the treatment of puerperal eclampsia, especially as to the applicability of the induction of premature labor for its relief, and which he said was so at variance with those that he had been accustomed to entertain, and the verity of which he had so frequently tested, that he confessed surprise thereat. It was not in any spirit of controversy that he ventured at this time to oppose M. Charpentier's teachings, but simply in the interest of professional progress and science. The author then gave his own views regarding this subject, saying that they were fortified by an experience and observation extending over a period of many years. Furthermore, in the application of the principles he would lay down and advocate, a measure of success had been obtained at his hands that did not present itself under a contrary method previously pursued. The prinpal object of the paper was to advocate principles which the speaker grouped under the following heads:

1. Though the pathogenesis of eclampsia is unsettled it belongs solely to the pregnant or puerperal state. It is not appoplectic, epileptic or hysteric in character.

2. It depends upon toxemia due to overproduction of toxins and under elimination by the emunctories.

3. These toxins probably have their origin in the ingesta, in intestinal putrefaction, in fetal metabolism, one or all, and there is coexisting sluggishness, impairment or suspension of elimination.

4. When the prodromes of eclampsia appear, the kidney should be interrogated as to its functions and all symptoms carefully watched.

5. Treatment is preventive and curative. Preventive treatment is medicinal and hygienic; curative treatment is medicinal and obstetric.

6. Milk diet and distilled water should be given in the preeclamptic state to dilute the poison, hasten its elimination and nourish the patient.

7. Blood letting should only be employed in plethora or cyanosis. It is liable to cause anemia if persisted in or repeated, whereas red blood corpuscles must be conserved, not wasted. Glonoin diminishes vasomotor spasm, hence may be given freely in appropriate cases. Veratrum viride is a cardiac depressant and a dangerous remedy if pushed to an extent that will control convulsions.

8. Eclampsia is the expression of a further maternal intolerance of the fetus; hence as a prime measure the uterus should be speedily emptied of its contents.

9. Medicinal treatment alone is delusive and, when relied on exclusively, is fraught with danger to both mother and fetus; whereas in the prompt induction of labor is found a rational application of science to a desperate condition.

10. Finally, it furnishes, in the present state of our knowledge, the only basis of expectation for a diminished mortality in a toxemic disease of high death rate.

Dr. JOHN M. DUFF of Pittsburg opened the discussion and said, relative to the induction of premature labor in cases of eclampsia in which albuminuria is present, that conscientious practitioners would not hesitate, although in exceptional cases careful attention to medicinal treatment would cause the albumin to disappear and the patient would go on to normal labor. As a diuretic, he had secured excellent results from the use of milk, with a spoon, as hot as it could be borne by the patient.

Dr. H. W. LONGYEAR of Detroit was surprised that the essayist did not mention the necessity of inducing premature labor before the occurrence of eclamptic symptoms. Such treatment appeared analogous to snuffing out the light of a fuse after an explosion had occurred. Premature labor should be brought about in every instance in which a daily examination of the urine showed a constantly increasing amount of albumin, with prodromal symptoms of toxemia. During the past year he had induced premature labor twice under these circumstances. In one case the patient was seven and a half months pregnant and in the other eight months. He would not advocate this course merely because albumin was present in the urine, but because of this and the fact that the amount of urea eliminated was constantly decreasing. Hot milk was very valuable, in his opinion, in the treatment of these cases.

Dr. WALTER B. CHASE of Brooklyn stated that the decrease in the daily amount of urea was a most valuable indication of the probable occurrence of toxemia in these cases. Unfortunately, many eclamptic patients were seen for the first time only when in convulsions, and then the induction of premature labor was the single measure that could be relied on. In certain cases, however, in which the urine clears after a few days, it was unjustifiable to end the period of gestation prematurely. The best method of stopping the convulsions, particularly when arterial pressure is high, is by the administration of veratrum viride.

Dr. W. H. WENNING of Cincinnati doubted the advisability of bringing on premature labor under all circumstances in which toxemic symptoms develop. In many cases, if the os was rigid and not dilated, there was danger of inducing convulsions in the attempt of the obstetrician to dilate. He considers the psychologic element an important one. He gave the history of a patient who presented no symptoms whatever of toxemic infection, there being no albuminuria or edema present, but who died shortly after the birth of her child. Another patient fearing that her child might be born before the expiration of nine months from the date of her marriage was in a state of constant nervousness on this account, and when labor finally took place forceps had to be used. The patient soon developed a condition of marked apathy and would pay no attention to her child. On six different occasions she had a convulsive seizure immediately after the physician's visit and just as he was leaving the house, but each immediately ceased on his being recalled. The patient finally died, although there had been no true symptoms of toxemia.

Dr. CHARLES STOVER of Amsterdam, N. Y., said an important point was, how soon can the condition of puerperal eclampsia be diagnosticated? He emphasized the importance of a daily analysis of the urine. If the physician is called to see a patient late in the progress of the case the uranalysis might present entirely different features from that in the beginning. He knew of three cases which occurred during the past three months in which the attending physician had waited for more marked symptoms to occur after albuminuria had developed, and each of the patients died. He referred to the method of Dr. James H. Etheridge of Chicago of estimating the amount of urea, and considered it a valuable one. He also spoke of a case which came under his own observation, in which but 500 grains of urea were excreted daily when there should have been 1,300, the patient developing eclampsia.

President Ross said that he had found that the occurrence in females during early life, of exanthematous fevers, had a marked influence on subsequent renal insufficiency; and in more than one instance he had been able to trace this insufficiency to an attack of scarlet fever, or diphtheria, occurring during childbirth. The question of puerperal eclampsia was still unsettled; its pathology was shrouded in darkness, and a step forward would be for the larger medical associations to institute a series of investigations with the hope of determin-

ing its cause. In many of the worst cases premonitory symptoms were not present at all. He considered it unwise to use haste in emptying the uterus, when this has been determined on, as there was great danger of lacerating the parts. The question as to the advisability of inducing premature labor in the case of a patient who, in a former gestation, had eclamptic attacks, but in whom at the time of the subsequent pregnancy no symptoms of toxemia were present, was an important one. The speaker had completed the period of gestation in a number of cases of this sort, and believed such action entirely justifiable, although it can not be denied that a woman might go through a number of pregnancies normally before the occurrence of a second series of eclamptic seizures.

Dr. LONGYEAR—Would you advise the induction of premature labor under these circumstances if there are no symptoms whatever of renal insufficiency?

President ROSS—Yes. (The President then reported a case in which he had practiced it.)

Dr. RUFUS B. HALL of Cincinnati, looked upon such a doctrine as extremely dangerous and strongly opposed it. Simply because a woman at some previous time had had eclampsia was not sufficient reason for terminating gestation prematurely when no symptoms of toxemia were present.

Dr. POTTER, in closing the discussion, said the occurrence of albuminuria was a danger signal, but that decrease in the daily amount of urea excreted by a pregnant woman was still more valuable as a diagnostic sign. The violent production of premature labor was never justifiable. If eclamptic attacks occurred some time previous to labor the physician might take time in emptying the uterus, but in the intrapartum variety, the cervix should be carefully dilated by means of a steel dilator and the hand, and, if necessary, forceps applied and the fetus delivered. He had accomplished this within three hours when the cervix was rigid, without lacerating the tissues, and had saved the life of both mother and child.

Dr. H. W. LONGYEAR of detroit, read a paper on

PUERPERAL DIPHTHERIA,

the object of which was to bring before the profession the fact that the Klebs-Loeffler bacillus is a potent factor in the etiology of puerperal infection, six cases being reported in proof of the position of the writer. The diphtheritic character of each case was determined not only by clinical evidence, but by bacteriologic examination made by the bacteriologist of the Detroit Board of Health. Five of the cases recovered and one died, the one death being the only case in which antidiphtheritic serum was not used.

The writer recommends bacteriologic examination in all cases of puerperal infection, condemns curetting in all cases where a membranous exudate is present, and recommends the use of antidiphtheritic serum, the intra-uterine application of a strong solution of iodin and carbolic acid at the beginning of treatment, drainage of the uterus by a tube, intra-uterine irrigation with antiseptic solutions, bi-hourly vaginal injections of hydrogen peroxid, and the usual supportive treatment with quinin and whisky. In mixed cases of Klebs-Loeffler bacillus and streptococcus, he would first use the antidiphtheritic serum, and then in twenty-four to forty-eight hours, begin the use of the antistreptococcic serum. He believes that the true character of this form of infection has not been heretofore recognized, but that it will be found to be more or less prevalent in all localities in which diphtheria exists if sufficiently critical examinations are made. The physician and midwife are warned to use especial care in such localities, as the postpartum parturient canal furnishes the most favorable soil for the growth of the Klebs-Loeffler bacillus.

Dr. JOHN M. DUFF of Pittsburg, followed with a paper on

THE SOURCE OF PUERPERAL SEPSIS.

The source of puerperal sepsis he said was given by the authorities as contagion from a woman similarly affected, from suppurating or decaying tissues, from putrefying substances within or without the body, and from zymotic diseases, especially erysipelas and diphtheria.

The exact source in any given case was not always easy to determine. In a large proportion of cases, however, a careful inquiry would be rewarded with the revelation of a source. When found it generally proved to be one which could have been avoided.

Aseptic midwifery had done much to prevent puerperal sepsis, and consequently to lower the rate of mortality following childbirth. He had heard and read remarks by members of the profession in sentiment expressing the opinion that the accoucheur who was so unfortunate as to have a case of puerperal sepsis occur in his obstetric work was guilty of malpractice. Such expressions he thought were extravagant and were not warranted by our present knowledge and experience. Sepsis does occur sometimes despite the best efforts of the practitioner to prevent it. While he believes puerperal sepsis can not always be prevented, he does believe that with ideal surroundings, with a careful and skilful physician, supplemented by an educated and conscientious nurse, the number of cases could be reduced to a minimum. His observations teach him that while on the one hand there was no attempt at aseptic or antiseptic precautions, there was frequently too much reliance placed upon antiseptics. For instance, a well known member of the profession had said in his hearing a short time since that he felt perfectly safe in going to attend a case of labor after waiting upon a case of erysipelas or diphtheria, if he washed his hands well in a strong bichlorid solution. Dr. Duff thinks his patients will be safer if he went to them under such circumstances with fear and trembling, which would cause him to perform further ablutions if possible.

Without discussing at length the different known sources of infection or defining the varieties of sepsis, the author reported fifty cases of puerperal sepsis that had come under his observation.

These two papers were then discussed together.

Dr. A. GOLDSPOHN of Chicago, said such papers as the one presented by Dr. Duff were calculated to do a great deal of good. The old idea was still prevalent that puerperal fever was something specific. This was a mistake. It was an infection, just the same as a phlegmon or other inflammation which occurs in any other part of the body. The cause of it was thoroughly settled, viz., septic germs. Men who had labored exhaustively in Europe on this subject had come to the conclusion that the most dangerous germ of the disease was the streptococcus, which was present in about 4 per cent. of the cases.

Dr. LEWIS S. MCMURTRY of Louisville, said physicians were apt to think that because puerperal sepsis was discussed a number of times and so much had been written about it, that professional sentiment was crystallized and that it was a work of supererogation to agitate the subject, but if we would look around us in our respective localities we would find that the number of deaths from puerperal sepsis is very large. He sometimes thought that we do not realize at the present time, in large cities and in country districts, how great the mortality is from this altogether preventable disease, and until the mortality is reduced very materially the subject should be discussed repeatedly and published to the profession, showing the responsibility and duty that rest upon practitioners.

Dr. CHARLES G. CUMSTON of Boston, spoke of the principal cause of puerperal sepsis from a pathologic standpoint. In 1893 he conducted a series of experiments with reference to the bacterium coli. Among the specimens and autopsies that he performed in view of ascertaining the virulence of this organism he had five cases of puerperal septicemia, in all of which the uterus was carefully examined. The folds of the membrane lining the uterine cavity contained the bacterium coli, as was subsequently proven by cultures. Two of the uteri were removed by the vaginal route, and on the other three patients he performed autopsies. He could not give the clinical history of the cases, but only the anatomic and bacteriologic findings. A second cause of puerperal septicemia, and a very potent one, was the gonococcus, in that it prepares the way for pus producing organisms to enter the uterine cavity and thus set up infection.

Dr. JAMES F. BALDWIN of Columbus, Ohio, stated that in three cases of so-called puerperal fever that had come under his observation the infection was found to be due to appendicitis, and he supposes it was attributable to the bacillus coli communis. Two of the cases were operated on and recovered. The third case was operated on by another surgeon and died.

Dr. WM. WARREN POTTER of Buffalo, drew attention to the point that in discussions on certain papers presented to societies, and even in magazine articles, there was a disposition to drop from the literature of the subject the term puerperal fever. There were some old fashioned things that the profession need to cling to because they were good, but puerperal fever was no longer recognized as a distinct entity. The term was misleading in itself, because it leads to an erroneous pathology and an equally erroneous treatment.

Dr. ADAM H. WRIGHT of Toronto, said that in the majority of cases of puerperal sepsis the poison comes from without and the condition can be avoided. It is a preventable disease.

Dr. EDWIN WALKER of Evansville, Ind., said that it was a much more rational thing to dry out the genital tract than to wash it out. He would admit that even if the genital tract was dried out we could not get rid of all the germs, but we could deprive them of their nourishment. If we use a douche of clean water we furnish the germs a pabulum for their nour-

ishment. In puerperal sepsis he would advise wiping out the genital tract rather than douching it.

President Ross said he had seen a large number of cases of puerperal sepsis in consultation, owing to the fact that the patients had either pus tubes, pelvic abscess, or some such condition present, although he did not do an obstetric practice. He gives the causes of puerperal sepsis as follows: 1. Gonorrhea. 2. Retained placenta or membranes. 3. Dirty hands and instruments. 4. Lacerations of the cervix and perineum, improperly repaired or protected. 5. Intra-abdominal disease or tumors.

Dr. ALBERT VANDER VEER of Albany, said he was quite sure that he reiterated the experience of other abdominal surgeons when he said that it was sad to witness the amount of ignorance that existed in regard to careful aseptic obstetric work. If we are to use serum therapy, it is very essential to make a differential diagnosis, as was touched upon by Dr. Longyear, and the speaker fancied that the future history of this work would be in the direction of the serum of streptococci. The cases must be seen as early as possible.

Dr. ALBERT GOLDSPOHN of Chicago, said the gonococcus was not the exciting, but merely the predisposing cause of puerperal sepsis. There was no case of puerperal sepsis on record in which the gonococcus alone was the cause of the trouble. Other pus microbes were present in this condition, and the infection was a mixed one.

FIRST DAY—AFTERNOON SESSION.

Dr. ADAM H. WRIGHT of Toronto read a paper on

TOXEMIA OF PREGNANCY,

in which he said that the chief symptoms of this condition were salivation; disorders of digestion, with sometimes a peculiar taste, and constipation; general malaise; anemia; nervous disturbances or headache; disorders of vision; irritability; deficient excretion of urine or some of its constituents, and albuminuria. To speak briefly, he thought any sign of the slightest departure from ordinary health during pregnancy should make us suspect the advent of general toxemia, and should receive careful investigation and thorough treatment. If, for instance, there be general malaise, with slight headache, but no albumin in the urine, let us not be deceived, since albuminuria was only one of the symptoms of systemic poisoning, and sometimes the last to appear. Its absence proved absolutely nothing.

Coming to the treatment, reference was made to milk diet for toxemia or albuminuria of pregnancy. He believes that a purely milk diet is good for young babes and calves, but he does not think that it is suitable for adult human beings. Yeo, in his admirable book on "Food in Health and Disease," shows clearly that milk is not a suitable food for healthy adults because it contains an excess of albuminates and fats, and that it should be mixed with other foods, especially the carbohydrates. If it be conceded that milk alone is not the best food for healthy adults, it is difficult to conceive how it can be the most suitable in any case of disease.

In connection with his results in the Burnside Hospital, in nine years they have had sixty-five cases of toxemia with albuminuria with two deaths, both from eclampsia. One of these two patients came into the hospital in a dying condition with eclampsia, having received no previous treatment. In the sixty-five cases mentioned there were many cases where the albuminuria and other symptoms were only slight.

In conclusion, the author enumerated the main points in his treatment as follows: 1, a carefully selected mixed diet with plenty of water, plain and mineral, lemonade without sugar, etc.; 2, rest, good hygienic surroundings and proper clothing; 3, the regular and persistent use of purgatives for weeks or months, with a preference for epsom salts; 4, a warm daily bath; 5, the induction of abortion or premature labor in rare cases.

THE TREATMENT OF PUERPERAL ENDOMETRITIS BY THE CAROSSA METHOD.

By EDWARD J. ILL, M.D., Newark, N. J.

There appeared a pamphlet early in the winter of 1896 by K. Carossa, describing a method which consists simply in the use of alcohol as an irrigating material, supplemented by gauze packing of the uterus in such a way that the alcohol finds its way into the most distant recesses of the uterus. A catheter is introduced into the uterus and this organ filled with absorbent gauze in a lightly, but thorough fashion. At the external end of this catheter a funnel is attached through which a 20 to 25 volume per cent. of alcohol solution is poured so as to flow into the gauze with which the uterus is filled. The quantity to be used is from 30 to 50 c.c. every hour, day and night. In three to six days the gauze is removed.

The originator of this method presents some fantastic theory of the evaporation of alcohol which the author of the paper can not agree with, and to which Dr. Carossa attributes his results. Dr. Ill has used the above method, slightly modified, with good results and recommends it for further trial, especially so on account of its great simplicity.

Dr. RUFUS B. HALL of Cincinnati, discussed some of the

SEQUELÆ FOLLOWING SUPRAVAGINAL HYSTERECTOMY.

He said he thought the profession had been too hasty in approving the present methods. They had taken the stand that there was nothing more to be desired; the operation was complete. While the Doctor had no new method to offer, he hoped the discussion of his paper would suggest something to improve the technique of the present methods.

He referred to objections to the extraperitoneal method, and then spoke more in detail of total extirpation. He was one of the first to advocate and make this operation, and he had attained excellent results with it. However, it did not meet his ideas of a perfect operation. The final results were good, but there was a primary difficulty that was disagreeable. Suppuration necessarily took place about the ligatures on the sixth or seventh day, causing a slight rise in temperature. To overcome the suppuration, he used specially prepared catgut for the ligatures below the peritoneum. He found the catgut unreliable on account of the danger from hemorrhage through slipping of the knots, and so abandoned its use.

After seeing Dr. Kelly of Baltimore, in 1895, make the supravaginal operation with his modifications in the technique of the Baer method, Dr. Hall adopted that method. He operated according to it forty-six times, but was not pleased with his results. Eleven of the cases had post-operative sequelæ, due to the buried ligatures. All the patients made good primary recoveries, only one showing any signs of trouble earlier than the seventh week. This one had a discharge of pus from the vagina at the end of the fourth week. The discharge disappeared to return again at intervals of a few days to four or five weeks, and only ceased when the ligatures were removed. The other cases had similar histories except that they did not have any trouble until from four to eleven months after the operation. Within a few days after the ligatures were removed, the patients were well and have remained so, except two. These two, one sixteen and the other eighteen months since the operation, are still having trouble as the ligatures have not all come away. The Doctor said he knew the material was not at fault or there would have been trouble immediately following the operation. Besides, the same material was used in other operations and no trouble resulted. He said he believed a large percentage of the patients so operated on would certainly have this trouble. The general surgeons are abandoning the use of silk, silkworm gut and silver wire in Bassini's operation for this very reason, and he felt it only logical for the gynecologist to expect to have to do the same. He urged the other gynecologists to tell their results with this method and compare notes.

The Doctor closed his paper by saying that in spite of the fault he had to find with total extirpation, he preferred it to supravaginal hysterectomy as practiced by Baer and modified by others. He felt more certain of his final results with the former method.

Dr. GEORGE M. HUGHES of Philadelphia read a paper on

THE SEQUELÆ OF DEAD LIGATURES AND SUTURES.

While assisting Dr. Joseph Price in his abdominal work the essayist had recently been greatly interested in a number of cases in which he reopened the abdomen for the freeing of adhesions and the removal of dead ligatures and sutures. Sutures and ligatures should be of that material which is easiest sterilized and which combines great strength in a small bulk. It was always preferable to use a material capable of being rendered aseptic by heat or boiling. If this could be done, we could at all times have the means at hand to render our ligatures perfectly sterile. For this purpose he finds that for pedicle ligatures and for bowel work the twisted Chinese silk is the best, of finest quality and sufficiently small to secure safe tying; for closure of the abdominal incision silkworm gut and the through and through method. What becomes of the ligatures? If small and sterile, they become encapsulated and rapidly absorbed. If plaited ligatures and large hawsers are used, whether infected or not, they are never absorbed, but their presence as foreign bodies give a train of symptoms unbearable in their distress and constant in their duration. The same conditions are found about the pedicles, only here we have the adhesions of omentum, large and small bowel and bladder to both the pedicles. To obviate post-operative sequelæ we should select that method of applying ligatures which gives safety with the least quantity of material. For pedicles the simple figure-of-eight tie is the best, in that it gives a firm, small,

strong tie and one not liable to slip. The pedicle is then cut cone-shape. The pedicle must be made as small as possible; large pedicles are prone to behave badly, and to this is due the post-operative adhesions of omentum, bowel or bladder. To illustrate his remarks the essayist selected and reported five instructive cases.

(*To be continued.*)

SELECTIONS.

The "Plaque-System" of Filtration of Water Supplies.—Engineer Fischer of the public works department of the city of Worms, Germany, has invented a filtration method that is claimed to have decided advantages over the ordinary sand or gravel beds. The basis of the new system is found in the fact that clean, sharp sand when mixed in due proportion with finely pulverized glass, which may be derived from the waste of a high temperature, may be hardened in any desired form. The inventor in this case hit upon the plan of molding this porous cement into hollow plates or "plaques" about forty inches square and eight inches thick, that is, with walls three inches in thickness and about two inches of hollow space at the center of the plaque. The system is sometimes spoken of as the "plaque system of filtration." In constructing the filtering plant, these plates are set upright in groups or batteries of any number, according to the desired size and capacity of the establishment, and are ranged along the lower portion of one or more tanks of hydraulic masonry, where they can be covered to a depth of three or four feet with the water to be filtered. The water is then forced by its own pressure through the porous walls of the plates into the interior hollow space, where it trickles down and is drawn off through pipes laid at the bottom of the tank, to the reservoir which receives the filtered water. These discharge pipes are rigged with cocks so that each plate and group of plates may be isolated for cleaning or other purposes while the adjacent batteries are in operation. The water, in passing through the three-inch walls of vitrified sand, is filtered as perfectly as by traversing three feet of loose sand or gravel in the ordinary sand filtering process. The plates being set upright and close to each other increase from eight- to ten-fold the filtering surface that may be condensed within any given superficial area, thus securing an important economy of space between frost-proof constructions, and where, as is often the case, land is costly and difficult to obtain. According to an official report by M. Janssen of the University of Brussels, who made an exhaustive study of the whole subject at Worms, that city began in 1889 the filtration of Rhine water for general purposes by the ordinary sand filtering process similar to that then used at Berlin. With a filtering surface of 1,300 square meters (approximately 13,000 square feet), 3,000 cubic meters (792,510 gallons) of water were filtered in twenty-four hours. This supply proved insufficient for the city, and it became necessary to construct an addition to the filtering plant, the cost of which, on the sand filter plan, was estimated at $30,000. It was then that the Fischer system was given a practical trial. Instead of occupying new land and building additional constructions, one of the ten vaults containing the sand filters already in use was isolated, cleaned out and the space filled with a battery of five hundred plates of the Fischer pattern. The whole cost of the change thus made was about $9,600, and the new filters, occupying one-ninth as much space as the sand filters, doubled the filtering capacity of the entire installation. In other works, five hundred Fischer plates costing, set up and ready for operation, $9,600, and occupying only 130 square meters of space, filtered as much water as the sand filters which occupy 1,170 square meters of space and cost $30,000. To substitute the Fischer plates for sand throughout the entire establishment would be to increase the filtering surface from 1,300 to 10,000 square meters (approximately from 13,000 to 100,000 square feet) and multiply by ten the daily filtering capacity of the plant. From a long series of analyses and careful observations by the sanitary authorities at Worms, it appears that the efficiency of the two systems of filtering, which are there worked side by side, are practically identical, so far as regards their effect on the chemic purity of the water, but the percentage of bacteria left by the Fischer process is somewhat greater than is left by the sand filter when clean and in good working condition. This, however, is not considered a defect of practical importance. The water delivered by the new filter at Worms, as well as at the other places where they are in daily use, is certified by high and impartial authority to be thoroughly purified and fitted for drinking, as well as for culinary and manufacturing purposes. In addition to the city of Worms, the following towns have adopted this system: Kiel, Landberg (near Berlin), Madgeburg, Frankenhausen and Winterthur, and it is thought possible that certain of our inland cities, like Cincinnati, Louisville and Cairo, may find in the experience of the above towns an aid to the solution of the problem of the safe utilization of their near-by river supply.—*Consular Reports.*

Lord Lister on Physiologic Research.—Lord Lister has made an important and interesting address on the subject of modern pathologic research at the opening of the Belfast Physiological and Pathological Laboratories, an extract from which as published in the *British Medical Journal* is given below:

"There are people who entertain exaggerated views," he says in effect, "regarding the work that is accomplished at such laboratories. There are people who do not object to eating a mutton-chop, people who do not even object to shooting a pheasant with the considerable chance that it may be only wounded and may have to die after lingering in pain, unable to obtain its proper nutriment, and yet who consider it something monstrous to introduce under the skin of a guinea pig a little inoculation of some microbe to ascertain its action. Those seem to me to be most inconsistent views. With regard to all matters in which we are concerned in this world, everything depends on the motive. A murderer may cut a man's throat to kill him; any one of you medical students may have to cut a man's throat to save his life. The father who chastises his son for the sake of the good of his morals is a most humane man; a father who should beat his son for the mere sake of inflicting pain upon him would be an inhuman monster. And so it is with the necessary experiments upon lower animals. If they were made, as some people seem to assume, for the mere sport of the thing, they would be indeed to be deprecated and decried; but if they are made with the wholly noble object of not only increasing human knowledge, but also diminishing human suffering, then I hold that such investigations are deserving of all praise. Those little know who lightly speak on these matters how much self-denial is required in the prosecution of such researches when they are conducted, as indeed they always are, so far as I am aware, with the object of establishing new truth. The exercise of a little charity might lead those who speak of us as inhuman to reflect that possibly we may be as humane as themselves.

"The profession to which I have the great honor to belong is, I firmly believe, on the average, the most humane of all professions. The medical student may be sometimes a rough diamond; but when he comes to have personal charge of patients, and to have the life and health of a fellow creature depending on his individual care, he becomes a changed man, and from that day forth his life becomes a constant exercise of beneficence. With that beneficence there is associated benevolence; and in that practical way our profession becomes the most benevolent of all. If our detractors knew this, common sense would enable them to see that our profession would not be unanimously in favor of these researches if they were the iniquitous things which they are sometimes represented to be.

"I have been interested in the following account of a part of Pasteur's work on rabies: It had been established that the introduction of a portion of the brain of a mad dog under the skin of a healthy animal was liable to cause rabies, and Pasteur had reason to believe that it was principally in the nervous centers that the poison accumulated. He felt a very strong desire to introduce some of the poison into the brain of an animal; but he was a peculiarly humane man. He never could shoot an animal for sport. He was more humane than the great majority of human beings, and for a long time he could not bring himself to make the experiment of trephining an animal's skull and introducing some of the poison of rabies into the brain. He was exceeding desirous of doing it to establish the pathology of the disease, but he shrank from it. On

one occasion, when he was absent from home, one of his assistants did the experiment, and when Pasteur came back he told him that he had done so. 'Oh!' said Pasteur, 'the poor creature! His brain has been touched. I am afraid he will be affected with paralysis.' The assistant went into a neighboring room and brought in the animal, which was a dog. It came in frisking about and investigating everything in a perfectly natural manner, and Pasteur was exceedingly pleased, and although he did not like dogs, yet he lavished his affection upon that particular animal and petted it; and from that time forth he felt his scruples need no longer exist. So soon as our poor selves are directly concerned our objections vanish into thin air; a tiger threatens to invade our camp; who would care much about what kind of trap was set for it, or what suffering the trap caused the animal, so long as it was caught? When the matter affects only the welfare of others, including that of generations yet unborn, the good done does not appeal to the individual and the objector sees only the alleged horrors of modern scientific investigation; of which horrors, however, he quickly loses the sense as soon as he becomes personally concerned."

PRACTICAL NOTES.

Sub-diaphragmatic Abscesses are usually fatal if left to themselves, but the symptoms are so contradictory that they are rarely diagnosed during life. The experience of H. Graves has been therefore exceptional, as he reports six cases in his practice in Sweden, diagnosed and operated in time to save all but one.—*Hygeia*, 1.

Belladonna for Tuberculous Abscesses.—Hamant recommends the use of a belladonna salve (extract bellad. 3 to 30 grams vaselin), for the abscesses caused by the external eruption of an underlying tuberculous focus, as he has found it possessed a favorable, even perhaps a specific effect in such cases, the more remarkable as it has no effect on non-tuberculous ulcerations.—*Therap. Woch.*, July 25.

Some Points in Scarlet Fever Cases.—Dr. Joseph W. Hickler of Orange, N. J. (New York Academy of Medicine meeting, June 3), in his experiments for an immunizing serum, discovered that the mucus of the throat and mouth contained the contagium of scarlet fever, and that the early eruptive stage was very infective because of the discharges from the mouth and throat. He found the average period of incubation to be thirty-two hours; time before vomiting, twelve hours; shortest time for desquamation, three days; and the longest, nine days.

Decalcification of the Arteries; Rumpf's Treatment of Angina Pectoris.—Professor Rumpf of Hamburg ascribes the etiology of certain affections, notably angina pectoris, to accumulations of lime in the arteries, and has secured remarkably favorable results in twelve cases in which he has produced increased elimination of lime through the urine and feces, while reducing to the minimum the amount of lime ingested. He denounces the use of milk in cardiac affections, as it is rich in calcareous salts, and restricts his patients to the following diet per day: Meat, 250 grams; bread, fish, potatoes and apples, each 100 grams. This menu contains 93 grams of albumin, 14 of fat, 93 of carbohydrates, and furnishes 892 calories. Adding 100 grams of butter, 100 of cream and 50 of sugar, the number of calories is 2000. It contains ten times less lime than a strictly milk diet and three to four times less than the Hoffmann substitute diet. The potatoes can be replaced by an equal quantity of green peas, beans or cucumbers, but he forbids any milk, eggs, cheese, beets, spinach, rice, or any food rich in lime. For a drink he orders distilled water, or at least water boiled and cooled. His medication is limited to the following, to be taken during the day: Sodium carbonate, 10 grams; lactic acid, q. s. to saturate. Add lactic acid, 10 grams; simple syrup, 10 grams, and 200 grams aq. dest. This medication can be employed for a long while without inconvenience. The amount of lime eliminated with this treatment increased 50 to 52 per cent. Rumpf does not hope to cure, but merely to arrest the development of the affection, and his truly remarkable success in relieving severe cases of angina pectoris should encourage others to persevere in this line.—*Presse Méd.*, July 17.

Importance of the Motor Functions of the Stomach.—According to J. Boas of Berlin, we have been inclined to ascribe altogether too much importance to the chemic action of the stomach as the chief factor in normal digestion, when in fact its motor capacity is the most important. He asserts that the hydrochloric acid of the stomach is not a secretion necessary to the integrity of the organism nor of the stomach, also that even with copious secretion of hydrochloric acid, fementation occurs as soon as any serious mechanical obstruction intervenes, but adds that ulcerations of the gastric mucosa may produce limited fermentation even without mechanical obstruction to the outflow. It is therefore the main task of gastric therapeutics to cure disturbances in the motor functions of the stomach. In determining insufficiency, inflation and illumination are less reliable than the Leube or Boas test supper. (The latter consists of a cup of tea, two wheat rolls with butter and cold meat.) If food is found in the stomach in the morning following this meal, there must be great mechanical disturbance of the process of digestion; much gastric juice with it signifies hypersecretion; mucus, gastritis; bile, some obstruction in the duodenum or upper jejunum; stearic acid, fermentation of fats; alcohol, lactic acid, carbonic acid, marsh and hydrogen gas indicate fermentation of carbohydrates; sulphuretted hydrogen, etc., fermentation of albumin. Of the micro organisms, the sarcinæ thrive best on hydrochloric media; the bacilli on lactic acid fermentation; scantily in benign ectasia with hydrochloric acid. Saccharomyces are found in every case. Removing the cause is the first indication; extirpating cancer of the pylorus, stretching the contracted pylorus (Oreta), pyloroplastics (Heineke-Mikulicz), separation of adhesions. Gastro-enterostomy may cure in benign cases, even without removing the cause. Surprising success is sometimes attained by palliative measures. He classifies the indications for the diet as follows: 1, "insufficiency with permeable pylorus and retained (increased) secretion of gastric juice, require restriction of the fluids allowed; 2, pylorus contracted, normal (increased) secretion of gastric juice, indicates that fluid and soft food will be better digested, especially milk in small amounts; 3 and 4, suppression of the secretion of the gastric juice, carcinoma with stagnation and severe gastritis. Fluid food is best adapted to all these cases, taken in small, frequent meals. In benign stenosis with abundant secretion of gastric juice, the best diet is animal albumin with restricted nonnitrogenous food; in stenosis of the pylorus with lack of gastric juice, carbohydrates and fats are preferable, with easily assimilated vegetable albumin. In every case milk must be tried. If it is impossible to maintain the nitrogenous equilibrium of the organism by the food taken into the stomach, which shows imperfect diuresis, it must be supplemented per rectum. As the tissues dry out rapidly in such cases, the introduction of salt solution is valuable; also of alimentary fluids, such as milk with eggs, red wine, starch and salt. Irrigation of the stomach is only required in severe stagnation, but can be employed occasionally, if care is afterward taken to entirely remove all the water. It should be made late at night or early in the morning, with salicylic acid added, 3 to 1,000. The effect of massage and electricity is not yet sufficiently determined. There is no medicine for motor insufficiency, although strychnin, orexin, cetrarin and columbin have been recommended. To curb fermentation, salicylic acid (0.3 to 0.5 gram), or salicylate of soda (1 to 2 grams) are best, administered in the evening. Sodium bicarbonate, magnesia and Carlsbad salts expel the gases. Hydrochloric acid can be administered when it is absent, and opiates and laxatives are demanded in certain cases.—*Memorabilien*, July.

THE
Journal of the American Medical Association
PUBLISHED WEEKLY.

SUBSCRIPTION PRICE, INCLUDING POSTAGE:

Per Annum, in Advance $5.00
Foreign Postage 1.75
Single Copies . . . . . 10 Cents.

In requesting change of address, give *old* as well as new location. Subscriptions may begin at any time and be sent to

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION,
No. 61 Market Street (Occidental Buildings), Chicago, Illinois.

MEMBERSHIP IN THE AMERICAN MEDICAL ASSOCIATION.

This is obtainable, at any time, by a member of any State or local Medical Society which is entitled to send delegates to the Association. All that is necessary is for the applicant to write to the Treasurer of the Association, Dr. Henry P. Newman, Venetian Building, Chicago, Ill., sending him a certificate or statement that the applicant is in good standing in his own Society, signed by the President and Secretary of said Society. Attendance as a delegate at an annual meeting of the Association is not necessary to obtain membership.

On receipt of the subscription the weekly JOURNAL of the Association will be forwarded regularly.

Gentlemen already members of the Association should send their annual subscription to the Treasurer, or direct to the JOURNAL office.

All communications and manuscript of whatever character, intended for publication in the JOURNAL, should be addressed to the *Editor*, and all communications relative to the business of the JOURNAL, proof sheets returned, or in regard to subscriptions, should be addressed to THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION, 61 Market Street (Occidental Buildings), Chicago.

Original communications are only received with the understanding that they are exclusively contributed to this JOURNAL.

SATURDAY, AUGUST 28, 1897.

KLONDIKE NOSOLOGY.

Since the appearance of "Medical and Anthropological Notes on Alaska," by Dr. IRVING C. ROSSE of Washington,[1] who went on Arctic voyages in search of the exploring yacht *Jeannette* and the missing whalers, nothing of importance has been contributed to our medical or anthropologic knowledge of the glacial zone. In addition to writing the "Cruise of the *Corwin*" the Doctor, being a Fellow of the Royal Geographical Society, wrote an account of "The First Landing on Wrangel Island with some Remarks on the Northern Inhabitants," besides contributing to WOOD'S "Reference Hand Book of the Medical Sciences," the articles on "Scurvy" and on "Cold," which embody much of the information and experience gained on the fore-mentioned voyages.

Now that the wild and thoughtless rush to the Alaskan gold fields is uppermost in the public mind, everything relating to our far-away hyperborean possession calls forth an intensity of interest that makes all Alaskan matters pertinent and brings them to the front once more.

Of the many facts of scientific interest observed and recorded, those of a medical and anthropologic nature remarked by Dr. ROSSE may be classified according as they concern the effects produced upon the visitors by the peculiar conditions under which they found themselves, and those phenomena observed among the aboriginal inhabitants, owing in part to those same conditions, become permanent, and in part of course to race idiosyncracies.

[1] Government Printing Office: 1888.

Under the former heading we notice that a discrepancy was often observed between the record of the thermometer and the feeling of the observer, or, as the writer expresses it, between physical and physiologic cold. With the thermometer at 45 degrees F., the temperature was described as uncomfortably warm, and again at 60 degrees F., the direct sun heat was once almost overpowering. Whereas the experience of travelers in other latitudes, as for example in the Peruvian Andes, is cited as showing a keen and penetrating cold at the same temperature, 60 degrees F. As Dr. HAYES went swimming in a pool of water on the top of an iceberg in Greenland, and as other northern travelers have bathed in Siberian waters, so one writer took his plunge into the icy Arctic Sea on one of the physiologically warm days, and enjoyed it. The whole subject of heat production and temperature equilibrium among northern peoples as well as in the marine mammals is one of exceeding interest, and the reported facts of a physiologic rise of temperature after exposure to cold water or air in temperate climes may possibly indicate some special adaptation of thermic functions in these hyperboreans. At all events it is much to be regretted that want of instrumental facilities prevented any observations being made on the temperatures of the human subject under varying conditions; especially unfortunate is it in view of the suggestions as to the value of alcoholic beverages in cold climates. Contrary to the teaching of physiology regarding the vasomotor effects of alcohol, and contrary also to what has been often claimed, as in a recent paper by Dr. LEFFMANN before the Philadelphia County Medical Society, to be the experience of Arctic explorers of the deleterious effects of alcohol among northern voyagers, we find that Dr. ROSSE cites numerous Arctic travelers, and coincides with their testimony, to the effect that the moderate use of alcoholic beverages is found to be advantageous in the severe weather of the high latitudes. But it is possible that the discrepancy is more apparent than real, for we have no thermometric records on the spot to offset the physiologic evidence, while alcohol seems to be one of the best antiscorbutics, and we know scurvy to be one of the great banes of northern voyagers. The "heavy-headed revel which HAMLET confessed his countrymen to be addicted to, and to which travelers in general have observed a tendency in northern peoples, may be, as one author rather intimates, but nature's call for a protective against the inclement conditions of life; but if so, nature seems in some danger of overdoing the matter, for we read of the rapid depopulation of St. Lawrence Island, where one thousand of the inhabitants have perished in three years, and many villages are already quite extinct, a result ascribed to too much of the "bay rum," "Florida water," and other euphonious brands of poor alcohol which struggle past the revenue officers, and for

which the Eskimos exchange their furs with great eagerness. Much of the responsibility for this physical deterioration ascribed to intemperance properly belongs to the vile liquors used, and again to starvation. But certainly more exact observations as to the effects of alcohol in the human economy in cold climates are much to be desired.

The northern voyager seems to be, as a rule, tolerably free from acute bronchitis or pulmonary disorders while exposed to severe cold, but there is a marked tendency to the development of such affections after his return to a temperate climate. This was observed in the crew of the *Corwin*, as it has been in other individuals. On the other hand the natives seemed constantly suffering from colds and coughs, a fact which appears to show a greater cold-resisting power in the white race.

Some curious auditory and optic phenomena are recorded. The irregular refraction of the atmosphere at some points, taken in connection with the wonderful clearness in others, gives rise to remarkable deceptions of the vision. The distinctness with which small stones and other objects on a mountain side can be seen at times bewilders the vision, while the vagaries of the mirage and the blending of the real with with the unreal leaves one in doubt as to what he actually sees. The sound of a boatswain's orders, and of laughter and conversation at a distance of two miles, the noise of one's own beating arteries on a still day, and the repetition of echoes, in one case to nearly a hundred times after a pistol shot, are some of the freaks of acoustics.

The diseases to which the Innuit population are specially subject are scurvy, syphilis, and an epidemic which seems to have been of the nature of grippe or a species of pneumonia of an extremely asthenic type. No postmortem evidence was at hand to show whether the pathologic condition corresponded with that of the type of the disease common with us. Lung troubles in general are seen to follow a mild winter. Intermittent fever at Cook's Inlet, apparently originating on a bluff several hundred feet high, in houses exposed to a breeze direct from the inlet, is a fact more interesting than explicable. Rheumatism and gastric derangement, the latter often from overeating, are not rare.

Alaska is a favorite place for surgical operations, wounds healing with great rapidity. The presence of ozone and the absence of germs are believed to be the cause of this. Hysteria is a luxury which the female Eskimo is by no means willing to relinquish entirely to her white sister, and nervous diseases we find to be quite frequent. Our author, with much less levity for the narcotic weed than for alcohol, ascribes neurotic diseases to the senseless and filthy habit of using tobacco. Certainly they can not be considered as the sequelæ of civilization.

We may merely mention that the popular notion of the typical Eskimo cranium is said by Dr. ROSSE to be incorrect. Instead of the pyramidal skull, with prominent superciliary ridges, occipital protuberance, and zygomatic arches, and with small brain capacity, one finds the type to have a large facial angle (eighty degrees), and a brain capacity equal to the average Frenchman or German. The squamoparietal suture has not the convexity noticed in the chimpanzee and the mound-builder, and the index of the foramen magnum is about the same as in European crania. According to Dr. ROSSE, the facts regarding the natural intelligence of the Eskimo correspond with these cranial appearances, and the northern people have by no means the dulness and slowness of understanding which some have ascribed to them. Neither have they any coldness of the passions corresponding to the thermometric range of their climate. Unchastity is as common among them as among the hottest savage that swelters under the tropic sun, and it is evident that something more than external ice and snow are necessary to cool the desires of the human animal.

Much more of interest and novelty is told of the social, ethnic and other peculiarities of the Eskimo, of which space forbids further notice.

The instructive and practical value of the forementioned views of Alaska may be of great service to those seeking medical information concerning a part of the country almost unknown. Doubtless many lives will be lost and much suffering ensue from neglect of the proper precautions of a simple nature by the unprepared who, seized with the thirst for gold, brave the dangers beyond the north winds in a region best described as the "abomination of desolation." However, with the continued supply of the precious metal such a state of affairs can not long exist, for in a short time the all-powerful combination of gold and Anglo-Saxon energy will bring with it the iron horse and the electric installation, which will change present Klondike rigors into those of comfort and even luxury.

THE GERM OF YELLOW FEVER.

We have been much interested in the account given by SANARELLI of his bacillus icteroides, the recently announced *vera causa* of yellow fever. We have had so many announcements during the past twenty years of the discovery of this germ that we may be excused for hesitating to accept the cry, "Eureka!" Nevertheless SANARELLI's claim to the identification of the bacillus appears to have been based on satisfactory experimentation and to have met with official acknowledgment in South America, if we may credit newspaper accounts of a $10,000 premium awarded him for his discovery.

He found his bacillus mixed with the coli bacillus, staphylococci or streptococci, or he was unable to find

it owing to the cadavers being invaded by other microbes which caused the total disappearance of the specific bacillus. He found it in the circulating blood and in the interior of the tissues, but never in the gastro-intestinal contents, hence he holds that the virus of yellow fever does not reside in the digestive tube but is manufactured in the organs or in the blood itself.

In plate culture in ordinary gelatin the bacillus icteroides forms roundish colonies, transparent and granular, which during the first three or four days present the appearance of leucocytes. The granulation of the colony becomes continuously more marked, and usually a central or peripheric nucleus, completely opaque, is delineated. With time the entire colony becomes opaque, but does not liquefy gelatin. Streak cultures on gelatin solidify obliquely, forming brilliant opaque little drops similar to drops of milk.

The culture on agar-agar presents, according to SANARELLI, a diagnostic means of the first importance. When the colonies are developed in the incubator they are roundish, gray, a little iridescent, transparent, with a smooth surface and regular margins; but if instead of making them grow at a temperature of 37 degrees C. they are left to grow at a temperature of 20 to 30 degrees C., the colonies are like drops of milk, opaque, prominent, and with pearly reflections, different from those developed in the incubator. This difference can be utilized by exposing the cultures for the first twelve to sixteen hours to the temperature of the incubator, and then keeping them for twelve to sixteen hours more in that of the room. The colonies then show a flat central nucleus, transparent and bluish, surrounded by a prominent and opaque zone, the whole resembling a drop of sealing-wax. This character, which can be obtained even in twenty-four hours, serves to establish in the most rapid and certain manner the bacteriologic diagnosis of the bacillus icteroides. It is a facultative anaerobe, does not resist GRAM'S stain, slowly ferments lactose, more actively glucose and saccharose, but is not capable of coagulating milk. It strongly resists drying, dies in water at 60 degrees, and is killed in seven hours by the solar rays, but lives for a long time in sea water.

Eighteen years ago Dr. STERNBERG commenced his bacteriologic investigations into the etiology of yellow fever. They were made in Havana in 1879, 1888 and 1889; in Rio de Janeiro in 1887; in Vera Cruz in the same year and in Decatur, Alabama, in 1888. He concluded that among the micro-organisms found in yellow fever cases there was not one which by its constant presence and special pathogenic power could be shown indisputably to be the specific infectious agent. He recognized however, that there was a non-liquefying bacillus, which he called bacillus X, found generally in association with bacillus coli communis and which, as it had pathogenic properties and was not found in cadavers from other diseases, he at times felt convinced was the germ he was looking for; but scientific conservatism compelled him to withhold the announcement of a discovery in view of the fact that he had failed to find in about one half of the undoubted cases of yellow fever which he had examined; and he adds with exceeding naïveté, in his paper for the International Medical Congress at Moscow, that there have already been so many announcements of the discovery of this long sought-for microbe by CARMONA, FREIRE, GIBIER and FINDLAY, the fallacies of which he had demonstrated, that he was not willing to take any chances of making a similar mistake.

His bacillus as described in these early reports is a facultative anaerobe sometimes so short that it might be taken for a micrococcus. It is often united in pairs and is pleomorphous. Its growth on the surface of glycerin agar is white, cream-like in consistency and quite abundant. The superficial colonies are circular or irregular in outline with transparent margins and an opaque central portion sometimes corrugated. They are finely granular, iridescent and of a milk-white color by reflected light, but of a brownish color by transmitted light. This bacillus grows well at 20 degrees C., but more luxuriantly at 30 to 35 degrees C. It is not destroyed by exposure to a freezing mixture of ice and salt for two hours; its thermal death point is 60 to 62 degrees C. It is pathogenic for guinea pigs, still more so for rabbits.

We are aware that, in the paper prepared by Dr. STERNBERG for the Twelfth International Medical Congress he affirms his belief in the identity of his bacillus X with the bacillus icteroides of SANARELLI. This bacillus he obtained from yellow fever cadavers in Havana, and concerning it he reported, in 1890: "Bacillus X, I have not obtained up to the present time in any comparative researches and consequently regard it as possibly connected with the etiology of the disease. But I have not been able to obtain any satisfactory experimental evidence upon which to base a positive claim that this is the case."

Some of the experimental evidence is opposed to the view that the bacillus is identical with SANARELLI'S bacillus icteroides. STERNBERG found that inoculation with the blood or the liver parenchyma of persons dead from yellow fever had no harmful effect on guinea pigs or rabbits except in occasional cases in which the bacillus of rabbit septicemia was present. He recorded a negative, however, at the end of five or six days, but SANARELLI states that his bacillus produces a cyclic febrile disease which always ends fatally in eight to twelve days. Again, the non-liquefying bacilli are not found in sufficient numbers, nor are they sufficiently constant to give support to the view that they are the specific cause of the disease. This was STERN-

BERG'S conclusion after many examinations of liver and blood. These bacilli when found in the tissues, were found also in the alimentary canal; but SANARELLI has not found his bacillus icteroides in the intestinal contents. STERNBERG concluded that they made their way from the canal to the tissues; SANARELLI, that the poison is manufactured in the blood and in the interior of the organs.

STERNBERG found his bacillus X in one-half of his cases; SANARELLI his bacillus icteroides in 58 per cent. This was the *status quo* when the latter made his convincing experiments on the dog, the monkey and on man.

STERNBERG holds, and apparently with justice, that the identity of the two bacilli is obvious, claiming that unless this identity is conceded it would be difficult to admit that SANARELLI'S bacillus is the germ of yellow fever, for unless it is identical with bacillus X it was not present in the yellow fever cases examined by him during his extended researches in Havana.

The fact that bacillus X is not destroyed by freezing is opposed to the view of its being the yellow fever germ; but the interesting observations of SANARELLI on the symbiosis of the bacillus icteroides with certain hypomycetous fungi appear to dispose of this difficulty and to throw light on many hitherto obscure matters relating to the etiology of the disease. Dr. STERNBERG proposes at once resuming his experiments with the view of ascertaining whether his bacillus X has the pathogenic properties ascribed to bacillus icteroides by SANARELLI; and we may add that since his departure for Moscow intravenous experiments on dogs conducted under his direction in the Army Medical Museum have given characteristic results.

A CHEMIST UPON EXPERT TESTIMONY.

The address of vice-president and chairman W. P. MASON of the Chemical Section of the American Association for the Advancement of Science, at its recent Detroit meeting, dealt with a subject that has some interest to medical men, especially those who are called upon to give their opinions in courts of justice—that of expert testimony. Those of us also who make no special claims to expertness also have reason to desire, for the credit of our profession, that something should be done or said to better the status of the medical expert, and the suggestions here offered by one who is not a physician but a chemist, is an additional proof of what is not perhaps fully appreciated by us, that experts in all branches of science suffer under the same disadvantages before our tribunals. The pseudo-scientist abounds everywhere and discredits all the learned professions alike, and ignorant counsel and judges sneer at false and true experts alike. If we as physicians have suffered more in this way than specialists in other lines, it is for the reason that there are more of us, and especially because too many of our number, without necessary evil intent, permit themselves, it may be, to be led beyond the field in which they are truly experts and are not, like some others in the same position, as Professor MASON very properly says every expert witness should be, as fearless of legitimate ignorance as they ought to be fearful of illegitimate knowledge.

Assuming, however, that all experts are truthful and can clearly and tersely give an intelligent statement of their views and can aptly and clearly illustrate them, there are yet some conditions and situations in which they can be put in an entirely false position discrediting themselves, their cause and their profession, and some of these are very forcibly stated by Professor MASON in his address. In the first place, in a medical point of view, we have the ignorance and prejudice of lawyers, juries and judges. If this is felt to their disadvantage by chemists and others, it is still more appreciable by the medical expert. There is no nonsense so absurd that some educated and in some respects cultured people will not accept as scientific truth, and medicine is the one field of all others in which the credulity of the laity has run riot. This is one of the facts that we have to reckon with, and even a real expert who thoroughly knows his subject can not always relieve himself from the disadvantageous position in which it may place him "With stupidity even the gods strive in vain."

It is unfortunate that even the friendly counsel may often through their ignorance and prejudice thus embarrass the expert witness, who may often have to pray to be delivered from his friends. The hypothetic question, which has been editorially endorsed in the JOURNAL as an ideal method of obtaining expert opinion, may be so imperfectly or clumsily made up as to be seriously embarrassing to any one who wishes to convey a correct idea of his opinion of the case. Questions may be intentionally asked requiring a categoric answer which is likely to be directly misleading, and the expert refused the privilege of making the proper and necessary explanations. The only recourse is to appeal to the court, and to claim that as the witness is on oath to tell the whole truth and nothing else, he should not be confined in his answers to statements that taken by themselves do not convey the whole truth or that may actually imply a falsehood. Professor MASON in this connection raises an interesting legal point as to what is the duty of the expert witness, should he in all cases simply answer questions or should he state facts as known to him which might convey different impressions. Lawyers seem to have rather divergent opinions as regards this question, one high legal authority maintaining that the expert is for the time the property of the side employing him and is therefore to confine his answers entirely to the questions as asked. Another admitted this to be the

rule in civil cases but that the situation was different when the life or liberty of an individual was involved. Morally there would appear to be no question as to the duty of the expert, and it certainly would be advisable for the same, before going on the witness stand, to have a good understanding with the lawyer of the side employing him as to all the reservations of freedom of speech that his conscience may demand. No honest man would desire to wrong another by his sins of omission any more than he would to actually bear false witness against him, and the expert has not the advocate's plea of ignorance in his special field of knowledge.

An important practical suggestion that Professor MASON makes is that the expert should not trust implicitly the record made by court stenographers but should always seek an opportunity to examine the notes and ascertain if he is correctly reported. Court reporters are not always perfectly accurate, they sometimes leave out important statements and, at the best, they are inevitably ignorant of scientific terms and liable to misunderstand them. Hence the necessity of avoiding technicalities in the testimony as far as possible, for the sake of the reporter as well as the jury, and it is in this respect that mistakes and erroneous records are perhaps the most frequently made. If experts would always revise their recorded testimony they would escape the inconvenience they sometimes experience of being charged with statements they never made and of having such charges supported by the official record.

An expert is such only in his own particular department and should not fear to express his ignorance outside of it. It is a common practice of lawyers to attempt to draw from him opinions in regard to subjects outside his specialty and even those calling the witness may err in this way in the direct examination and be irritated if not answered to their satisfaction. It is always safest for the expert to avoid being thus misled, and while this trick is perhaps most often tried on non-medical experts, it is well for the physician also to be on his guard in this respect and not to hesitate to admit his lack of special information upon outside matters. The failure to do this has often resulted in embarrassing situations. The expert should also of course be well informed in regard to the authorities in his specialty, but should carefully avoid anything like the assumption of knowledge that is not possessed. It is much better to admit ignorance than to be caught by a lawyer's trick into admitting even the existence of pseudo-authorities, as some have done to their own discomfiture.

An expert may be well posted and thoroughly truthful but may fail to make a good impression for want of attention to the matters suggested by Professor MASON'S address. It was delivered before a non-medical assemblage, but the points it contained are worth the attention of those called as medical experts as well.

ON GOING FANTEE.

In Africa the negro, after being pulled some little way out of his savagery by the strenuous and ethical civilized master, shows a continual tendency to drop back into the primitive condition. The missionary labors for years to pound into the head of a black brother some notion of the Christian religion, thinks at last he has succeeded, when suddenly the man disappears and is found the chief actor in some barbaric and outrageous dance of superstition or of cannibalism. The white officer finds his trusted servant is not as usual on hand to perform his hitherto well done services. He too, for a longer or shorter time, has reverted to old habits that were temporarily held in abeyance by the will of the superior. In African lingo, these and all such lapses from a later and higher to an earlier and lower state are said to be "going fantee."

But it strikes us that it is not only the poor darkey that thus goes fantee, but that his civilized brother is occasionally guilty of the same custom. Indeed, do we not all feel the pull downward and backward? Do we not sometimes relapse secretly and pull up sharply again? Do we not have our private little fantee habits that logically belie our public virtues? At best, do we not keep ourselves in line by constant spurring of our better nature and tiresome attention to conscience and Mrs. Grundy? We all know of men who are as conscious of the disgrace as can be, and yet who seem incapable of resisting the impulse to go off once in three or six or twelve months and have "an old-fashioned drunk." It has been said that country merchants, despite the drummers, find it necessary to go to the city to buy their goods, and also to "see the sights," at least once or twice a year. In some rural places the conversion, sincere enough at the time, has with certain characters to be repeated every revival season. Even ladies, and great ones too—modern, we mean, not alone Neronian and Quatorzian, have been known to relapse in the peculiar feminine way from the most civilized ideals of conduct. This is probably the reason why so many preachers' sons go wrong, and also the sons of others who are constantly in the public eye. Their fathers are so watched that they have no chance to go fantee, and their sons by natural reaction and the law of compensation have to take upon themselves the disagreeable but easy vicarious task for the parents.

Nay, more! Is not the great scientific truth of atavism but an illustration of what may be called the more general law of going fantee? It is only tissue-fantee, one type or class, whilst fanteeism in its larger scope includes customs and habits, social, religious and ethical, of universal extent and spiritual significance. Telegony is therefore but one aspect of the law, and when the son of a virtuous and revered father runs riot with all paternal monies and respectabilities,

it is a sort of spiritual telegony or fanteeism, just as well as when the highly bred animal is spoiled for breeding purposes by one marriage-error, or when the subsequent human husband finds the children of his own begetting are quite as much the heirs of his wife's first husband as they are his own. Lucifer would undoubtedly, in these scientific days, contend that the other angels were "too virtuous by half," and that his own fall was but an instance of angelic fanteeism on the part of the very proper ones who scapegoated their own sins upon him. He had to go fantee to save them all from little lapses, and Hades is where all the virtuous may temporarily go fantee before returning to civilized life, where "good form" and "the proper thing" may be resumed until the secret drag of concealed appetite can no longer be resisted.

And so, as perfect and virtuously superhuman as we undoubtedly are, we physicians are necessarily subject to the universal law; we also have our professional fanteeisms. For example, when we see in the daily papers accounts of Dr. Vanity's doings, his operations, cures, travels and appointments to hospital postions, we know of course what it means, and we sigh for the good man whose ethical habits are not continuously and uninterruptedly strong. When we find a doctor "laying pipes" and "wire-pulling" for a year with all the political arts of a CHOKER, FLAT or SWAY, to become the president of some medical organization, we wonder if this particular fanteeism is not an illustration of a very uniform tendency that will have its regular outbreaks in some sad form or other, either annually or more frequently. When we find a member of the profession certifying to the wondrous therapeutic effects of a nostrum; when we find a dozen "professors" employing a well-paid lobby to get State endowments for their "college" or "hospital;" when we find regulars defending sectarianism and consulting with quacks; when we find men who need no "antiquated code" to keep themselves ethical—when we note one or two of a hundred such symptoms in a patient, we perhaps shake our heads as to the prognosis, but we are in no sort of doubt as to the diagnosis, and we have no indecision as to what the treatment should be. Alas! that the consultant (the whole profession) will not consent to the somewhat drastic but necessary measures required for a speedy and permanent cure.

We might revert to one instance of a certain beginning, at least, wherein the American profession seems to be starting on a fanteeistic debauch. There are a few members of the ASSOCIATION who seem to look upon its annual meeting as an occasion for going fantee. Far be it from us to look with any sort of puritanic eyes upon innocent pleasures, even those of the stomach. But there is a huge difference between these and what some think admissible in the way of drinking and eating. It is becoming somewhat of a scandal among the laity that "these doctors are about as bad a lot as the rest of us." The writer has heard more than one such disgusted person sneer at the way some physicians behave at these meetings, and the way we carry on our "banquets" and "receptions." On the score of taste alone we should not fall into blunders of excess—we who are supposed to be the teachers of hygiene and the curers of belly-aches. There is much truth in the lay criticism. We allude to no recent events, but only speak in the most general way. The indebtedness of physicians for train-loads of things for "entertainment," to commercial advertisers, the giving of banquets to mobs of roaring, hustling, half tipsy people, the forcing of "hospitalities" upon overloaded stomachs and jaded senses—all this is as absurd and sickening as it is professionally wrong. Apart from the example it sets before a gaping lay world, it is doubly wrong because of the precedent it sets *en famille*. When the meeting takes place in ensuing years at smaller cities, or where the local profession is not so wealthy, it results in flagrant injustice to these local members, who by the vicious example are forced to pecuniary expense that is compelled and not voluntary, and which they can ill endure, or else the example of the previous meeting stings in their sensibilities or those of their thoughtless guests. There is at least one word of suggestion we would make as regards the entertainment at future meetings: Let there never be another "stand-up-feed." It is simply disgusting for people to fight for food and drink and then walk about and talk, choking down the things, spilling them over floors and dresses and littering rooms with soiled and broken crockery. Let whoever gives any sort of "entertainment" to his guests hereafter, for decency's sake, let him invite only the number his table will seat, and let these guests eat and drink as becomes ladies and gentlemen of civilized times!

Finally, not to be too serious in hot weather, we may allude to one wholly excusable, nay, advisable way of indulging inherited, half-outlived but still somewhat, though too little active tendencies and primitive habits of our nature. This is the play-instinct which has lately been alluded to in these columns. It is very literally a bit of atavism and reversion to a more barbaric way, but it is one, as we have said, quite admirable. We shall not be able to fall far or long at a time, as the exigencies of life prevent that. Indeed, our danger seems to be the reverse, and the privilege of taking a vacation is fast becoming a duty to be urged. No man has a moral or professional or social right to work so hard, and with such tragic things, as do we physicians for twelve months of the year. Perhaps the harmless method of atavism will prevent some other and far more regrettable method of "wasting time." If, as seems inevitable, we must all occasionally relapse, and moreover, if we always keep the strings too taut, they may snap, it is

perhaps best that we choose the better rather than the worse forms of reversion. We have a choice even in such things as fanteeism. Death itself is but going fantee, and yet we may all more or less postpone this big "go" by wisdom and forethought. It should be a part of the "New Code" (if there is to be one) which every practitioner ought solemnly to swear to keep, that we would all take at least one month of play and rest. Leave the crowds, get to some quiet bit of nature, where man and his ills can not intrude, get on the old clothes, romp with the youngsters, read poetry, listen to the birds, and court your wives in good old primitive fashion. *Go fantee!*

TRAUMATIC RUPTURE OF THE HEART WITHOUT EXTERNAL LESION.

Wounds of the heart, while not actually rare, are by no means common. Occasionally recovery may follow such injury without surgical intervention, but as a rule death results. Recent experience in several recorded cases has shown that incised wounds of the heart are susceptible of successful surgical treatment, provided of course the lesion be not too extensive, the loss of blood not too large and the measures of relief are employed without undue delay. Contused and indirect wounds of the heart are even less common and naturally more difficult of recognition and correspondingly less amenable to surgical intervention. An interesting case of this sort, in which death took place suddenly a month after the reception of the injury has been placed on record by GROOM (*Lancet*, May 1, 1897, p. 1202). A lad 16 years old was caught between the shaft of a trap drawn by a runaway pony and some wooden railings. He was kept in bed for five days, but remained weak and unwell.

A month after the accident, while walking out of doors, the young man fell on the pathway, face downward, and was soon dead. Upon postmortem examination no sign whatever of injury to the superficial structures or the ribs was found. When, however, the pericardium was opened the sac was found to be filled with blood, some of which was clotted. On removal of this and turning the heart over without detaching it, a hole about the size of the end of a little finger through the middle of the posterior aspect of the left ventricle was discovered, the actual size of the rupture being about a third of an inch. On removing the heart and opening the ventricle the myocardium was found to be perfectly sound except at the spot mentioned. The hole was quite conical and bulging when the little finger was introduced, and the rupture external and consisting merely of the pericardial covering of the wall.

The conclusion is reached that the accident had caused a partial rupture of the inner portion of the wall of the left ventricle at a spot opposite to the point at which the shaft of the trap had pressed, and that the blood pressure had during the month intervening between the accident and death caused an aneurysmal bulging of the weakened part, its wall becoming thinner until ultimately it burst. The rupture viewed from the interior of the ventricle looked much like a bullet-hole.

CORRESPONDENCE.

The Treatment of Diabetes.

NEW YORK, Aug. 9, 1897.

To the Editor:—Pardon my further contribution to the subject of diabetes, now so wisely occupying attention in the JOURNAL.

I have no quarrel with Dr. Munson; he is too good a student and careful observer for me to do anything but welcome his opinions and observations no matter how I may differ from him. He knows things that I do not know and I believe I know some things that he does not know. The disease in question is very fatal and any light that can be thrown from any source should be welcome.

Carbonic acid, sulphydric acid and other paralyzing gases do directly act on the liver and help to increase the production of sugar in diabetes. Horses and cattle die suddenly from colic because of the self-same paralysis. Small boys sometimes die in a few hours from the colic produced by the fermentation of green apples which they have eaten. Cases of Bright's disease under treatment, whose urine has become entirely clear of albumin, casts and fatty epithelia, will have the same abnormal stigmata of that disease brought back by eating foods which ferment into these same paralyzing gases. A man under treatment for locomotor ataxia with great improvement in strength, gait and feelings is tempted into Delmonico's and given by a friend "a dinner which will not hurt him." This same dinner ferments and brings back all his pain, distress and troubles. Cases of consumption whose cough has ceased under treatment, will when they commence to eat the wrong food which ferments, invariably bring back the cough because of the irritation and paralysis of these same gases. A boy under treatment for partial paralysis of the lower extremities had improved so that he was able to locomote easily. A birthday party was given him and his fond mother loaded him up with ice-cream with the inevitable result of fermentation and paralysis of the lower extremities. I could go on much further. I know from my personal experience in the treatment of diabetes that foods that ferment do produce carbonic acid gas and other paralyzing gases and that they help the production of sugar. If a patient can eat sugar, potatoes, bread, starches of any kind, without this fermentation I believe their cases will go along all right.

One word as to beef dyspepsia. This results in the formation of sulphydric acid gas and is a troublesome thing to handle. I have seen but two cases of it in eleven years of study of chronic cases and have never seen it in the treatment of diabetes. If such should occur the treatment would be the stopping of solid beef, giving plenty of hot water, beef tea or the whites of eggs dropped in boiling water, as the condition of the patient demands. It is generally but a few days before the condition is cleared up, but this self-same paralyzing gas hinders the course of any treatment as much as the carbonic acid gas from the starchy and sugary fermentation.

I am sorry, exceedingly sorry, that the physiologists do not back me up. As one who earns his bread and butter in the treatment of disease, dependent not upon dead men's money which has endowed some professorship in an institution of

learning, I make one of the court of last appeal in matters medical, as the practitioner has to get at the truth of all theories and observations by his work with his patient.

My income would be much more precarious than a medical man's income generally is if I had to practice medicine on the dicta of physiologists. They do not give us light as to the management of chronic diseases; in fact I lay down the broad statement that the medical colleges all over this country neglect this important branch of the practice of medicine and that the volume of light which is now being thrown on such work comes not from pathologists or physiologists or works on practice of medicine but from practitioners' contributions in medical journals, the chief of which is the JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION.

As to alcoholic and acetic acid fermentation in the bowels, a study of morphology of the feces will show the alcoholic and acetic acid plants, and I have seen flour that has been raised into bread by the yeast, found in the feces of consumptives. As to the use of the term "morphology," as far as I know, Dr. Ephraim Cutter over twenty-five years ago was the first to employ the term in medical microscopy. The late Dr. Heintzmann then took it up and now a great many bacteriologists and some of the very recent students of the blood who are discovering the things which were worked out by Americans over thirty years ago are using this term morphology.

As to Victor Hugo and my reference to him, I simply call attention to my paper on "Tuberculosis and Vinegar" which will be published in the JOURNAL in due time, I hope, as part of a transaction of the Section on Physiology and Dietetics at the 1897 meeting. Robert Koch, no doubt, to a great many men is the beginning and end of all law and knowledge as to certain microscopic matters. Nevertheless there are others in the practice of medicine who did good work when Robert Koch was a small boy.

Dr. Munson doubts my diagnosis in the case of the young woman in 1888. As the patient was emaciated, suffered from great weakness, so that to move about she constantly had to urge herself or push herself, that she suffered from thirst and had peculiar feelings about the tongue, I thought that my diagnosis with the chemistry of the urine was right; it may have been wrong.

I do not believe in an exclusive beef diet as a panacea. There is nothing in medicine that is a panacea. If a beef diet is a panacea, perhaps I should not have buried my wife last Thanksgiving day though there were small cavities healed in both lungs which she had carried for seven years despite a fatal prognosis made in 1889 that she could live but three months. I believe, however, that if she had not lost her appetite three years ago, she would be living in fair health now, because a beef diet with but little other food prolonged her life and she died literally of heart failure.

I have had so many medical friends and enemies attack me on the ground that a meat diet did cause uric acid, coma and death, that I am very glad to find out that the profession is thinking differently.

Dr. Munson speaks of a case which suffered under a diet of meat, fish and eggs; I do not wonder. How any medical man would take a feeble case of diabetes and shove so much food on him, I can not understand. A diet of fish is not long tolerated; the yolks of eggs are a direct cause of cystinemia, as I have found in patient after patient, and cystin in the blood will produce rheumatism and neuralgias of the most excruciating types; oatmeal feeders also suffer with this. Parenthetically I might say that the best solvent of cystin is lemon juice.

Now, it is the bottom principle in feeding in chronic cases that the simpler you feed the more your patient improves. I generally put a case of diabetes on the broiled chopped beef with hot water one hour before meals, and on going to bed at night, and with drinks of beef tea between meals. I have invariably seen the sugar diminish under this regimen, and as soon as possible bring in other food, studying the case carefully.

Now, beef can be borne longer than any other single article of food: it digests easily, assimilates well and nourishes all tissues. I well recognize the fact that physiologists condemn it as an exclusive article of diet and I do not believe in putting any patient on one food unless absolutely necessary, but when patients have lived on beef alone, seasoned with pepper, salt, butter, Worcester sauce, horse-raddish or lemon-juice, as desired, with clear tea or coffee for from one month to two years, what am I going to do? Am I to give up all of my clinical evidence simply because physiologists say that the evidence does not exist, and patients can not live that length of time? Let me take other cases of chronic disease. A girl sick with epilepsy of several years duration could live on beef alone without seizures. She would be fed on it solely for several months, then solely on steamed whole wheat for a while. Either food alone caused no trouble; the two together would produce the explosions. After a while as she progressed she could eat them both together. Occasionally fits would come on her which we found were due to her stealing sugars or molasses, the same sugars and molasses fermenting (I am so sorry I again run *contra* to the *dicta* of the physiologists which state that there is no such thing as fermentation in the alimentary tract) and producing carbonic acid gas, this carbonic acid gas would start the seizures again. This case after two years of treatment and dieting, getting to the age of fifteen years, received some local treatment for amenorrhea and has remained cured for over six years.

In closing I want to call attention to one law in the treatment of chronic cases: unless a case is moribund, there is almost invariably an improvement under treatment; no matter if the case is so close to the grave that one doubts the wisdom of endeavoring to do anything, if, under careful management it is found that the nerve forces are not so wasted by the battle of life that there are some left to work upon or, if the nerve forces are nearly all run out, the patient has such a temperament that he will take on strength and will vegetate like a dog does when he is sick, there is a good working chance of his recovery provided one can control finances and causes of worry; but the *contra* is often true; cases will make improvement for a while, but, despite the most careful management, the use of money and ample means, the best of nursing, the closest of study of everything impinging upon the patient, if that patient has wasted his nerve forces so far that they are practically gone and he has not the temperament to take on strength, he will surely go under and pass to his reward; hence, it is in the management of all these cases, Dr. Munson's, my own and others, we can not cure everybody, and we can not even temporarily relieve everybody and, therefore, our results can not not be based wholly on mortality lists.

Yours faithfully, JOHN A. CUTTER, M.D.

Increase of Diabetes.

MILTON, DEL., Aug. 12, 1897.

To the Editor:—In the JOURNAL of Aug. 7, 1897, I notice a communication from Dr. Ball of Philadelphia, Pa., calling the attention of the profession to the alarming increase of that dread and fatal disease, *diabetes*. One of his reasons assigned was the increased population of Jews in this country, and, he says, that the presentation of patients with that class of diseases to the hospitals far outnumbers that of any other nationality. His observation is without a doubt correct, but in this part of our country, where there is no other nationality except the native born, I find the same thing among us. So you see, that it is not confined to the Jews alone, but the gentile world as well. There is a cause for this. What may affect the Jews in their country and cause such troubles may not be a cause in this. At least I would not think the nationality had anything whatever to do with the disease. More than once I have

advanced the idea that our modern way of living, the patent roller-made flour, which is deprived of all the coarser part of the flour, and must be of all or nearly all of the carbohydrates, which go largely into the nutritious element of the same. The low price of it puts it within reach of the poorest families, and they, too, indulge in what is called the best grade of flour, when, at the same time, it is the life nutrition, and when you intrude upon native with improved or adulterated foods I many times see that some of the organs and fluids of the body must suffer.

JAMES A. HOPKINS, M.D.

Medical Legislation.

IOWA CITY, IOWA, Aug. 15, 1897.

To the Editor:—At the meeting of the Iowa State Medical Society, at Des Moines in 1896, discussion was had concerning a project to unite the practitioners of the State into an association to "influence legislation." Nothing was done by the society but subsequently an association was organized and an effort made to secure a union for political purposes of all practicing medicine, including sectarians with various labels. Many declined to unite with the organization; some because they believed the discordant elements would prevent any useful work, and others because they believed that the attempt to organize a political club out of a profession would lead rather to adverse legislation than to any legislative reform of advantage. A circular is the first fruit that has emanated from the association; and it appears to the writer that the introduction of the profession to practical politics of this kind, is undesirable. The physician has the same rights and duties as other citizens, and experience has shown that the study of medicine does not lessen the capacity of a man to serve the people in legislation or administration. It would probably be better for the country if, as individuals, the members of the medical profession took the practical and active interest in politics that has been so noticeable among their *confrères* of France. The reproach, that such an association has been used to advance personal interests, can not help lessening its value as a protector of general interests. The association however is not an offshoot or a part of the State Medical Society of Iowa.

"HALLER."

A Suggestion for the Next Meeting.

BOSTON, Aug. 18, 1897.

To the Editor:—Permit me to make a suggestion. If it be carried out I think it will add to the interest of our annual meetings. Some of us in the ASSOCIATION are engaged upon original work. This work can be presented to our brother members in two ways: by reading a paper about it, and (when it concerns something concrete) presenting the thing itself. The combination method at present employed could be improved on without infringing on the practical work of the Section. Instead of the momentary presentation of instruments, etc., in conjunction with the reading of a paper, would it not be well to have such devices and objects placed where the members could examine them at their leisure? Such an exhibit could be conveniently made in the rear of the hall where the Section meets, or in a reserved space in the usual exhibition hall. It would add nothing to the expense of the meeting, as a few tables is all that would be necessary for the purpose. Members of the Section having instruments, devices, X-ray pictures or other objects of practical interest could thus place them where their fellows could have access to them. If members had the opportunity to get a working knowledge of the new devices that are constantly being applied in the art of surgery, the practical utility of the Section would be increased. In time, perhaps, a surgeon who wished to keep abreast of his art could not afford to miss a meeting of the ASSOCIATION, not alone for what he could hear, but for what he could *see*. Trusting this suggestion will meet with consideration by interested members, I remain, respectfully,

EDWARD A. TRACY, M.D.

Infectious Disinfectors.

GROVELAND, MASS. Aug. 21, 1897.

To the Editor:—The following case was recently reported in the *Journal of Hygiene*, France: "A child suffering from a light attack of scarlatina is confined to his room for forty days, the room is disinfected by the board of health. Two days later the child presents undoubted symptoms of diphtheria—a patch on one tonsil. The physician in attendance does not doubt that the disinfectors brought this disease, as the child had seen no one but them and the physician who had himself not been exposed."

Such a theory seems hardly tenable. I have had cases in my own practice, of mixed infection, and others where diphtheria has followed scarlet fever, the patient ill at first with all the symptoms of scarlet fever and then with those of diphtheria. In none of these cases were cultures made demonstrating the presence of Klebs-Löffler bacilli. More recently I have had under my care a case where the symptoms were unmistakably those of scarlet fever supplemented by symptoms of true diphtheria. In this case cultures failed to show Klebs-Löffler bacilli, but supplied abundant evidence of streptococci. That there is a remarkable relationship between diphtheria and scarlet fever there can be no longer any doubt. Those who believe in this theory of unity of disease are finding considerable evidence to support their views.

W. THORNTON PARKER, M.D.

How the Defunct Osteopathy Bill was Passed by the Illinois Legislature.

ONEIDA, ILL., Aug. 20, 1897.

To the Editor:—I send you a *Journal of Osteopathy*. I know something of how they managed the late House at Springfield, which may be of interest, as I am well acquainted with our representative, Murdock. While the bill was being agitated I went to him and asked for his influence against it. He informed me that he was in favor of it, that one of the operators in the cult was at the capital demonstrating the treatment and one of the members who had sometime previously been laid up with an attack of rheumatism for six weeks, was taken suddenly one evening with a similar attack, and the osteopathic gentleman asked to be allowed to treat him just once and was granted the request. He at once proceeded to carry out the treatment in view of several of the other members. To use Mr. Murdock's expression, "he doubled his legs up and then pulled them out with a snap; thumped and pulled and doubled and rubbed and yanked. The patient the while yelled like a bull." After about half an hour of that he let his victim alone and by the next morning the man was as well as usual. Another patient was also exhibited. A man with dislocated wrist which the "doctors had failed to set or help," and he proceeded to at once replace it and let the man go without splint or bandage. To sum up, the man simply "pulled the leg" of the whole Illinois Legislature. Was it any wonder that the bill passed speedily on for the Governor's signature! But he showed himself a man with decision enough to refuse to sign it, thereby gaining the friendship of every reputable physician in the State and the ill will of a few cranks.

Yours for good, T. W. DAVIDSON, M.D.

No Itinerant Quacks in Kentucky.

EXECUTIVE OFFICE STATE BOARD OF HEALTH OF KENTUCKY, BOWLING GREEN, Aug. 7, 1897.

To the Editor:—After careful examination of the authorities Judge Thompson of Louisville has just handed down his opin-

ion in our test case with the osteopaths. They had plenty of money and were ably defended, but after the proof was heard we never had any doubt as to the result. They are not only the most ignorant, but also the most unscrupulous lot of empirics with which we have yet had to contend in this State. Our law has now been in operation nearly four years. It has been tested upon every point and so far we have not failed to secure a conviction in each case tried. We convicted the Copeland people, the "K. & K.'s," and all other concerns of that kind doing business here, and are able to report that there is not now an itinerant or advertising doctor within the limits of the State. Very respectfully,

J. N. MCCORMACK, M.D., Secretary.

[*Vide* JOURNAL, Aug. 14, 1897, pp. 351-352, Louisville column, for the text of this decision.]

Honorary Medical Degrees.

PHILADELPHIA, PA., Aug. 19, 1897.

To the Editor:—*Apropos* of the editorial in the JOURNAL of August 14 concerning the conferring of an honorary fellowship in the Royal College of Physicians on the Prince of Wales, it may be of interest to note that the first medical degree granted on this continent was an honorary one, bestowed on Daniel Turner of Connecticut by Yale College in 1720. As this was intended as a token of gratitude for Dr. Turner's liberal gifts to the college and not as a recognition of any particular fitness on his part to practice medicine, a wit of the time interpreted M.D. to signify *multum donavit*. Yours truly,

FRANCIS R. PACKARD, M.D.

PUBLIC HEALTH.

The Bacteriologic Laboratory of Princeton, N. J. is the recipient of a $3,000 appropriation from the State Legislature.

Disinfection of Bombay Mail.—The mail sacks from Bombay, per Cunard steamship *Servia*, from Liverpool, Eng., at New York, August 19, were transferred at quarantine for disinfection.

Ice Sources Must be Pure.—The Paterson (New Jersey) Health Board and the Police Department have united to enforce the law against persons dealing in ice cut from filthy ponds, rivers or lakes.

To Hurry Mortals Home.—The Health Commissioner of St. Louis has ordered an inspection of Chinese laundries. He fears that some may mouth-spray their work with tubercle bacilli, which being ironed into the clothing may cause contagion. Once these experts were in high esteem for washing infected clothes rejected by their timorous rivals.

Health in Michigan.—The report for July, 1897, as compared to that for June (*vide* JOURNAL, July 17, p. 186) shows consumption present at two places more; measles at 65 less; diphtheria at 26 less; scarlet fever at 19 less; whooping cough at 19 more; and typhoid fever at one place less. Compared with the July average for eleven years (1886-1897), measles was more prevalent; intermittent fever, cholera infantum, erysipelas, consumption, remittent fever and diarrhea less prevalent.

Health in Chicago.—The total number of deaths during July, 1897, was 2,275 or 1.44 per thousand against 1.52 per thousand in July, 1896. Of these deaths, 835 were persons under one year of age and 287 were between one and five years. The principal causes were: Infantile diarrhea, 413 deaths; diseases of nervous system, 231; consumption, 184; violence, 157; heart disease, 117; pneumonia, 79; cancer, 63; bronchitis, 48; diphtheria and membranous croup, 44; typhoid fever, 27.

Bovine Tuberculosis.—The State Board of Health of New York announces its belief in the efficacy of the tuberculin test for preventing the spread of cattle tuberculosis. Governor Black, however, vetoed an appropriation of $15,000 for the use of the Board in its investigations. The Saranac Board of Health intend to maintain a complete quarantine against the importation of untested cattle within the limits of their milk supply. As it is, nearly all the animals at this lake resort are native common stock and the more intelligent buyers of thoroughbred cattle refuse to accept purchases that do not pass the test in question. The State Board can do little more than merely approve these intentions.

The Duration of Infection in Whooping Cough.—Weill, who in 1894 expressed the opinion that whooping cough is contagious only during the premonitory catarrhal stage, has since put his opinion to the test (*Lyon Méd.*). On various occasions he permitted nearly one hundred young children who had not previously suffered from whooping cough to be associated in the same ward, for twenty days or more, with children suffering from the disease during the stage of whooping. In only one case was the disease contracted, and in this instance the patient from whom the infection was derived was in the very earliest period of the whooping stage. In three small epidemics, Weill was able to satisfy himself that infection was contracted from children who had not yet begun to whoop. He concludes that infection ceases very soon after the characteristic whoops commence, and that therefore in a family it is not the patient who is already whooping, but his brothers and sisters who have not previously had whooping cough, who ought to be isolated.—*Brit. Med. Journ.*

Smallpox Mortality in London, 1887-96.—The Asylum Board was first called upon to provide for the accommodation of smallpox patients at the end of 1870. During the ten years, 1871-80, they dealt with upward of 33,000 cases, all of which were treated in the town hospitals. The deaths in London in the ten years were 15,539, including 7,912 in 1871. In May, 1881, the "camp hospital" was opened at Darenth, and the system of removing cases of smallpox to the country thus initiated was gradually perfected, so that for many years all of the sufferers coming under the managers' care have been treated at extramural hospitals. During the ten years 1887-96, the number of cases admitted to the hospitals was 5,232. The deaths in London were 429 only, and of these 206 were registered in 1893, in which year 2,376 cases of smallpox were admitted to the managers' hospitals. Had the mortality during the ten years, 1887-96, been at the same rate as in the ten years, 1871-80, regard being had to increase of population, the deaths would have been not 429, but 18,752. The net gain in life saved during the ten years, therefore, was represented by 18,323 lives. In other words, had the average death rate from smallpox in the ten years 1871-80 continued throughout the ten years, 1887-96, 18,323 lives would have been sacrificed in addition to the 429 which were actually lost by death from this cause. This satisfactory result is admittedly due in a large measure, if not entirely, to the removal of nearly all cases of smallpox out of London.

Bacillus of Yellow Fever.—The superintendent of the Institute of Experimental Hygiene at Montevideo, J. Sanarelli, announces that he has succeeded in isolating a bacillus from the blood and internal tissues of yellow fever patients (See editorial in this issue.—Ed. JOURNAL), which produces the disease in animals inoculated with cultures of it, and also in man. The shape is that of a rod with rounded ends, growing in pairs or small groups in the cultures, developing on the usual media, with a specific appearance resembling a wax seal on a letter, when first developed ten to twelve hours in the oven and then the same length of time at the ordinary temperature. In the oven the culture develops iridescent and transparent, while at the ordinary temperature it forms shining, opaque drops like drops of milk. It is pathogenic for almost all animals, producing a cyclic disease lasting from five to twelve days, "analogous to

the disease observed in man." He has also succeeded in isolating the toxin developed by the bacillus and producing the same disease with it as with the cultures direct. Two persons inoculated subcutaneously, and three with intravenous injections of comparatively feeble doses of the filtered cultures, developed the typical picture of yellow fever, with all its clinical and anatomic manifestations. He is now engaged in serotherapeutic experiments, which already promise well.—*Semaine Méd.*, July 7.

A Decrease in Immigration.—In the entire period of federal supervision which dates from 1882, 7,432,016 immigrants have entered the United States. The arrivals of Russian Jews for the last year numbered 22,750, as against 45,137 for the fiscal year ended June 30, 1896. Italy furnished the greatest number of immigrants, 54,431, a decrease of 8,629 from last year. The cause of the heavy Italian immigration of 1896 was believed to be the war with Abysinnia, but the figures for the last year are not abnormal, having been exceeded by several years of the period. Since 1882 there has been a large and steady decrease in German immigration; in 1882, 250,630 people entered the United States from that country, while in 1896 only 22,533 arrived. It will be seen that the number of German immigrants in the first year of Government supervision exceeded the immigration from all countries in the last year. Immigration from Austria-Hungary decreased from 55,103 in 1896 to 33,031 in 1897. The decrease from other countries is as follows: England, 19,492 in 1896 to 9,974 in 1897; Sweden, 21,137 to 13,144; Norway, 8,155 to 5,842; Ireland, 40,262 to 28,421. By way of commentary it may be said that much encouragement has been disallowed by our own government as against the false representations of steamship lines, whose aim was for the profits of the steerage. Labor was not actually in demand and depleted purses left the victims of delusion stranded in the larger seaports. Fortunately neither crime nor disease became rampant because of the counteracting forces of dispersion and the lessons of governmental indifference taught from very infancy.

The French Academy of Medicine and the Prevention of Phosphorus Disease.—The important part taken by the French Academy, acting as an advisory department of the government, in this branch of disease prevention should not be overlooked. In that country the manufacture of matches is a state monopoly, and in view of the numerous cases of sickness and criticisms in the press, the authorities have requested the Academy to frame new regulations for the management of the factories. In the discussion that ensued it was evident that medical opinions were divided. One party advised that white phosphorus should no longer be used, as has been done in Belgium; others, however, thought it would be sufficient from a sanitary point of view to alter the arrangement of the workshops so as to obtain thorough ventilation, while refusing work to all who had not good teeth. The workers must be under strict medical supervision, and, as far as possible, machinery should be constructed so as to allow the whole process of manufacture to go on under glass, the workmen being protected from the poisonous fumes. In two factories, viz., at Algiers and Aix, there has not been a case of phosphorus poisoning for twelve years owing to the strict hygienic rules which have been in force. The cases which have so excited public opinion occurred at Aubervilliers, a suburb of Paris, in a very old factory which it is impossible to put into a sanitary condition and which ought to be pulled down, as to make it really healthy would cost more money than to build a new one. The real fact is that the workmen of Paris object to the introduction of machinery for the safe manufacture of matches with white phosphorus—that is to say, under glass—for in that case far fewer hands would be wanted, and they therefore demand the use of red phosphorus, to work in which necessitates a larger staff. This is the reason why, in Belgium where the manufacture of matches is free to anyone the workmen object to red phosphorus, and why in France the State, which panders to the political influence of the workers, is ready to satisfy them on this question, despite the increased expense. Matches made with red phosphorus are not so good as the others, for they are more difficult to light, the wood is very brittle and often breaks and the composition for tipping them demands the use of explosive materials which, like poisoning, constitute a serious source of danger. The Academy has agreed to the following answer being sent to the Minister: 1. It is necessary to put a stop to the unhealthy conditions which exist in many of the match factories of France. 2. The suppression of the use of white phosphorus is the only certain way of insuring health to the workers in this manufacture. 3. The employment of perfected automatic machinery is a costly matter and carries with it the condition that all dangerous operations should be done under glass. 4. Until these recommendations can be carried out as a whole the present condition of unhealthfulness can be reduced by careful sanitary supervision.

NECROLOGY.

Cornelius Kollock, M.D., Cheraw, S. C., August 16, aged 73 years. Dr. Kollock was graduated from Brown University in 1845, and from the medical department of the University of Pennsylvania in 1848. He then studied two years in Paris under Malgaigne, Cazeaux, Record, Velpeau, Siehel and other French surgeons of eminence. He was president of the Pee-Dee Medical Society for many years; of the South Carolina Medical Association in 1887; was elected vice-president of the American Gynecological Society in 1892, and in 1894 was president of the Southern Surgical and Gynecological Association.

Dr. Morvan has died at Lanniles, France, aged 73 years. In 1871 he was a member of the legislative assembly, but had for a long time given up politics for the sake of scientific work. He was the first to describe the group of clinical symptoms known as "Morvan's disease," which he considered to be a form of syringomyelia. Since then Dr. Zambaco Pacha of Constantinople, having traveled in Brittany, where Dr. Morvan studied the disease and where it is very common, came to the conclusion that it is an abortive form of leprosy. Dr. Morvan was a corresponding member of the Academy of Medicine.

John J. H. Love, M.D. Draft of a minute adopted at the meeting of the visiting staff of the Mountain-Side Hospital Aug. 16, 1897, in reference to the death of Dr. John J. H. Love (*Vide* Journal Aug. 7, 1897, p. 297).

No words can express the loss which the Mountain-Side Hospital has sustained in the death of Dr. Love, nor is it possible to so construe language as to give the measure of our personal loss in the death of our beloved leader. Filled with the courage and self-sacrifice that are born of high purpose and unselfish broad mindedness, and always willing to prefer the well-being of others to his own, he gave freely of his time and substance to the hospital. Its good name was as dear to him as his personal honor, and from his clear and comprehensive mind came most of the suggestions by the adoption of which the enterprise has been successfully carried on. Without Dr. Love it would have failed, with him it has achieved an enviable measure of success and usefulness. We can no longer enjoy his friendship, his guidance, his counsel nor his sympathy, but we have the brilliant example of his noble life, and of his devotion to the best interests of this hospital.

Richard C. Newton,
E. M. Ward,
H. B. Whitehorne. } Committee.

James Cozad, M.D., Reynolds, Ill., August 15, aged 61 years.—Adam B. Finney, M. D., Washington, D. C., August 9, aged 61 years.—Cornelius A. Groot, M.D., Auburn, N.Y., August 12. E. M. McPheron, M.D., Janesville, Wis., August 12, aged 35 years.—John Townsend, M.D., Holgate, Ohio, August 13.—Dr. Dewindt of Alost, president of the Belgian Medical Association.—Dr. O. Boer, co-laborer with Koch.

SOCIETY NEWS.

Election of Officers.—At the meeting of the American Association of Gynecologists and Obstetricians, just closed at Niagara Falls, N.Y., the following officers were elected: President, Dr. Charles A. L. Reed of Cincinnati; vice-presidents, Dr. Richard Douglass of Nashville, Tenn., and Dr. Walter B. Dorsett of St. Louis; secretary, Dr. William Warren Potter of Buffalo; treasurer, Dr. X. O. Werder of Pittsburg. The next meeting will be held at Pittsburg, Pa., Sept. 20, 21 and 22, 1898.

The Second Congress of Hydrology in Italy was held at Sangemini, and was principally devoted to exploiting the qualities of the famous mineral waters there, and its exquisite scenery. The waters are "acidulo-bicarbonate-calcic," and the establishment is managed according to the latest scientific theories, under the supervision of Olivieri, Santucci and Violati. The inauguration of a "Cure tax," like those of Germany, was discussed and approved. Dr. Fabbri proposed to found a large sanatorium at the Falls of Terni, where the climate and scenery are equally superb. He invited co-operation to render the project a success. Carlinfanti reported the results of his investigations on the solubility of uric acid in acidulo-alkalin waters, which proved that they will dissolve in nine hours five times more uric acid than pure water.—*Gaz. d. Osp. e d. Clin.*, July 18.

MISCELLANY.

The Boston Medical Library has been enriched by the collections of the late Drs. Edward Wigglesworth of Boston and William G. Wheeler of Chelsea, both of whom were industrious bibliophiles.

The Contractions of the Stomach studied with the Roentgen ray have resulted in establishing the fact that in the human stomach, like that of the frog and the dog, the larger part serves as the receptacle for the food, while the smaller prepyloric part is the motor organ of the stomach.—*Semaine Méd.*, July 28.

Progressive Osteoporosis.—Debove distinguishes by this term the form of osteomalacia in which the bones do not become softened but merely grow more and more porous, leading to progressive deformity and final death from thoracic accidents. The *Bulletin de l'Acad. de Méd.*, July 20, contains three typical observations.

Almshouse Amenities.—An Albany (N. Y.) dispatch to the New York *Herald* of August 11 reports that at the almshouse in North Hempstead, Queens County, one woman gave birth to four children while she was in the institution, and another woman had one child born under the same circumstances. The women are feeble minded and have been allowed to go out at intervals and return when they pleased. The State Board of Charities has ordered them sent to the Newark Asylum, where they can not have liberty. The five children have become county charges.

Admissible Evidence of Previous Condition.—A physician who had treated the plaintiff some three or four years before she was injured by an accident, and who had seen her somewhere from six months to two years prior to the happening of the accident, should be allowed to testify as to her physical condition prior to the happening of the accident. So holds the appellate division of the supreme court of New York, in Loudoun v. Eighth Avenue Railroad Company. The testimony, it says, being as to knowledge obtained in regard to the party's condition within a period of from six months to two years prior to the happening of the accident, was not so remote but that it formed some basis for comparison between her condition then and that which he exhibited at the time of the examination before the trial.

The Celluloid Bandage Casts proposed as a substitute for plaster casts, made by dissolving scraps of celluloid in acetone and spreading it on mull (*vide* JOURNAL, p. 437, Vol. xxvii), are highly recommended by Maass of Berlin, who has applied more than a hundred during the last ten months and is convinced of their superiority to the usual cast. They are extremely light, elastic, clean and imperishable, not affected by heat, perspiration nor pus, so solid that no steel supports are required, while they can be made with celluloid hinges when desired for articulations. The technique is very simple; any physician can make them without the assistance of an expert, and the danger from fire is slight; it is impossible for the cast to explode. The only disadvantages are that they take longer to harden, 8 to 12 hours (usually having to be made over a cast), and are a little more expensive on account of the acetone.—*Deutsche Med. Woch.*, July 29.

A Question of Values.—"I suppose," remarked the sarcastic house-wife, "that in the course of time ice will be worth as much as diamonds."

"Well," replied the ice man, reflectively, "diamonds are pretty good in their way, but you can not rely on their melting down so as to keep up a steady demand."—*Washington Star.*

Death by Poison.—A man, feeling slightly ill, went into a drug store in Detroit, and asked the proprietor to give him something to relieve the pain, and the proprietor, by mistake, gave him some aqua ammonia. It burned his mouth very severely, but he lived some fifteen days thereafter, when he died from the effects of the potion taken. The supreme court of Michigan holds that, under the circumstances, it was "death by poison," in contradistinction to the contention that it was a death from shock experienced when it was discovered that something wrong had been taken. (Early v. Standard Life and Accident Insurance Company.) The fact that the poison was accidentally administered, supposing it to be another substance, the court further holds could not take the case out of, but rather brought it within the exception in a policy of accident insurance excepting from its provisions death from poison.

Some General Principles that Should Govern Operations for Otitic Brain Disease.—Green (*Boston Medical and Surgical Journal*, Aug. 12, 1897, p. 145) includes among otitic brain diseases external pachymeningitis with extradural abscess, leptomeningitis or arachnitis, encephalitis or brain abscess, and phlebitis and thrombosis of the sinuses and the jugular vein; all caused by infections from the ear, the microbes being the same varieties as are found in the suppurating ear cavities, chiefly streptococci, staphylococci and pneumococci. In cases of otitic brain disease early operation is advisable, but an early exact diagnosis is often impossible. The chances are seventy-nine in a hundred that a fistula through the bone from the ear will lead directly to the brain abscess disease. The infected ear requires operation in any case. and this operation can be combined with an exploration for the bony fistula and the recognition and treatment of the brain disease.

The Memory of the Very Aged.—By reference to the newspaper statements of incidents in the lives of our still living centenarians, General Washington's nurse seems to have entirely vanished. One derelict, however, claims to have chatted with the first President when she must have been only six years old. As the reciter's years were made to fit the incident, in a medico-legal way, we should not hasten to gainsay it. Still the deduction is that the happening, provided it did occur, was of the nature of a faint impression developed by the iterations of others through a series of years. Personal vanity no doubt painted as usual with its yellow colors and not without its best art. How curious that the distance of four-score years lends both a haziness as well as an enchantment to the declining years! May we not add how fragmentary is the mosaic of all knowledge! Still, in the present instance, with all the fantastic tricks of the reigning psychology, we shall not pre-

tend to make an allegation of falsehood. Let the poor subjects of an extravagant longevity hug their delusions of a golden age to them gone forever, for no doubt they were excused from the grosser sins, or their lives would not have been so indefinitely prolonged.

Hospitals.

By the will of the late William Lewis Dayton the Mercer Hospital, Trenton, N. J., received $2,000.

The West Pennsylvania Hospital, Pittsburg, Pa., is to be enlarged by a new wing 145 by 55 feet, constructed of brick and four stories in height.

Ground will be broken in September for a hospital at Jamaica, Long Island, N. Y. The plans call for a substantial modern structure, extremely plain in its architectural lines. The building will have open plumbing throughout, special attention being given to the fixtures in the operating rooms and ventilating devices.

Societies.

The following meetings of societies are noted.

Indiana—Henry County Medical Society, Newcastle, Aug. 12.

New York—American Association of Gynecologists and Obstetricians, Niagara Falls, August 17–20. Cayuga County Medical Society, Auburn, August 13.

Pennsylvania—Berks County Medical Society, Reading, August 10. Bradford and Susquehanna County Medical Society, Lake Carey, August 10.

Texas—Lone Star Medical Association, composed of colored physicians, Houston, August 14. Texas Association of Railway Surgeons, Galveston, August 10.

Virginia—The twenty-eighth annual session of the Medical Society of Virginia will be held at Hot Springs, August 31 to September 2.

Wisconsin—Ashland County Medical Society, Ashland, August 12.

Louisville.

Lexington Insane Asylum. Dr. E. M. Wiley of Harrodsburg, has been appointed by the Governor as superintendent of the Eastern Kentucky Insane Asylum at Lexington in the place of Dr. Scott. Dr. Wiley's appointment has met with general approval. He was born in Jefferson County, Ind., forty seven years ago, is a graduate in medicine from one of the schools of Indianapolis, and has for several years been the surgeon of the Southern Railway at Harrodsburg. Dr. John L. Long of Louisville has been appointed as first assistant physician. Dr. Long made an enviable record a number of years ago as superintendent of the Louisville City Hospital, which position he held for several years, and he was prominently mentioned and endorsed for the position of superintendent of the Central Kentucky Insane Asylum at Lakeland in the place of Dr. McNary deceased, to which place Dr. Goslee, the former first assistant was finally appointed.

School of Reform. A year or so ago, as recorded in these columns, the State Legislature passed a law appropriating $100,000 for the purpose of establishing two reform schools for youthful criminals. Since that time the commissioners appointed by the Governor have been trying to decide upon a location, and at a meeting held this week in this city it was decided to locate one of the institutions in Fayette County near Lexington, if the offer made some time ago for a contribution of $5,000 from the city and $8,000 from the county is held good. At present both sexes will be received at this institution, though it is ultimately expected to have separate institutions. The commissioners are authorized to borrow the necessary funds by special act of legislature. A farm of not less than 100 acres will be selected at once to be approved by the commission and work will be begun immediately. The limit of the cost of the institution will be $50,000.

Muldraugh Hill Medical Society. This society, which is composed of the medical men of Hardin, Hart, Larue, Grayson, Meade, Bullitt and Jefferson Counties, has just concluded its second semi-annual meeting at Elizabethtown with Dr. Jerome Smith of Larue, president, in the chair. The next meeting will be held in the same place in December.

Pension Examiners. At the last meeting of the two boards, the new one appointed by President McKinley and the Democratic Board which claims that it is covered by the Civil Service rules, it was ascertained that all applicants for examination held instructions from the commissioner of pensions at Washington, to appear before the new board for examination. The old board will appeal to the Civil Service Commission for a ruling on the subject. The old board is composed of Drs. Ewing Marshall, T. P. Satterwhite and M. K. Allen.

Dr. E. W. Logan, who has been prominent in local politics for several years, has sold out and will go to Oregon for the winter, when he will leave in the early spring for Klondike and the Alaskan gold fields.

The University of California and the Homeopaths.—We publish below the recent correspondence in the matter of the petition for recognition of the homeopathic sect in the medical faculty of the university. The tenets of Hahnemann long since died in Europe, the place of its birth, but in the fertile soil of the newer, freer America, ill weeds grow apace.

PETITION OF THE HOMEOPATHS.

To the Honorable Board of Regents of the University of California.

Gentlemen: We, the undersigned directors and stockholders of the Hahnemann Hospital College of San Francisco, having been appointed a special committee by the board of directors of the said institution to present to your honorable body a petition praying for the affiliation of the Hahnemann Hospital College of San Francisco with the University of California, thereby forming a homeopathic department of the university, do hereby ask that such prayer be granted. The Hahnemann Hospital College of San Francisco was incorporated in 1881 and threw open its doors to students in June, 1884, since which time it has given a regular course of lectures each year in all branches of medicine and surgery. There have been graduated from said institution 125 students, and there are at present twenty-seven students in the various classes. The college has always demanded a high standard of education from its graduates. It required three full years of study in the college from its beginning and was with the medical department of the University of California, the first to demand a full four years' course of study in the college, as a compulsory requirement for graduation. The college, though not endowed, is wholly free from debt. There are in the State of California in actual practice today about twenty-three hundred licensed physicians of all schools, of which number, by actual count, 465 are of the homeopathic school, about one-fifth of the whole number. As the patrons of homeopathy are among the well-to-do class of citizens and not so much among the masses as the patrons of other schools of practice, it is undoubtedly a fact that such patrons pay at least one-third of the taxes of the State. Because we believe it to be for the best interests for the Hahnemann Hospital College of San Francisco, for homeopathy on the Pacific coast, for the large number of citizens and taxpayers of this State who do now or who may in the future employ homeopathic physicians, that the said college should be under the protection of the State University, and also because we believe it to be for the best interests of the University of California, as a great university, that there be a homeopathic department connected with it, we do therefore pray that the Hahnemann Hospital College of San Francisco may become affiliated with the University of California.

REJOINDER OF THE MEDICAL FACULTY.

To the Regents of the University of California:—A petition has been placed before your honorable body by the Homeopathic School of Medicine of this city praying that they be made an affiliated college of the University of California, which would therefore constitute them a teaching body of the University of California. There is, however, already a Medical Department of the University of California, which has always discharged its duties faithfully and unselfishly, working zealously for the honor of the university and for the advancement of medical knowledge. The present medical department feels that it would be an unjust criticism of their work if another faculty were appointed and tantamount to an assertion by the regents that the work of the present faculty was incomplete from a university standpoint. If such an opinion be held by the regents then it is only fair that they should first apprise the present faculty of its deficiencies so that an attempt may be made if found necessary to rectify them. But the present faculty of medicine does not believe that the regents have any intention to make such a criticism of its present faculty of medicine. They believe that the regents, in lending an ear to the petition of the homeopathic school of medicine, are simply wishful to find if it might be for the greater advancement of the university to take in a school which asserts itself to be possessed of a more enlightened and successful mode

of treatment than any other so-called school or collection of individuals now practicing medicine. The following facts would seem, however, to indicate that their boast of having a superior mode of treatment or a more advanced knowlege of medicine than the regular school of medicine is not well founded: Homeopathy began in 1810 with the publication by Hahnemann of his "Organon der rationellen Heilkunde." From then till now, a period of eighty-seven years, all scientific advance has found a ready ear and quick appreciation in all the civilized countries. Let us now examine carefully what respect and appreciation the homeopaths have been able to win either from the scientific world or from the general public. They are not recognized either in the army, navy or civil service of any government in the world, including our own. They are recognized by no institution of learning in any foreign country, and by only two institutions of learning in our own country, viz., Ann Arbor and the University of Iowa. Johns Hopkins University, for example, that particularly prides itself on its work of investigation, has not a single homeopath on its medical faculty. There are very few homeopaths in Germany, the birthplace of the founder, and no university there teaches homeopathy, but the verdict of the scientific world has been endorsed by the general public in so far that all steamships, all railroads and all life insurance companies choose almost invariably the medical services of the regular profession.

During all the eighty-seven years that the homeopaths have been in existence we can not recall a single instance of a scientific discovery in the field of medicine by one of their number, nor the fostering of scientific thought in one of their schools. The discovery of the sleep producing effect of ether and chloroform were made by regular medical men, working in regular medical schools. Lister, the originator of antisepsis in surgery from which the whole vast progress of modern surgery dates, is a regular physician and surgeon. Koch, the discoverer of the cause of consumption and of cholera, is a regular medical practitioner, working in a regular school. Pasteur, a chemist, worked under the auspices of a regular medical school. The discovery of the germ causing typhoid fever, and in fact the whole system of modern sanitary medicine and quarantine measures have developed under the influence of the regular school of medicine. The serum treatment for diphtheria by Behring was instituted in a regular working in the University of Berlin, a regular medical school. The great medical events of our own city have been carried out by members of the regular profession. The curing of an aneurysm of the abdominal aorta by Jno. F. Morse, the perfecting of the crushing operation for stone of the bladder by Chismon and the finding of a rare form of skin disease close to a parasite called a psorosperm by Rixford have all been done by members of the regular profession. Both Professor Le Conte and President Jordan, two of the most distinguished leaders of thought in the natural sciences in this country, are graduates from regular medical colleges and although not engaged in the practice of medicine yet serve to show that an education in a regular medical college does not dull a man's intellect or render him illiberal. This list of discoveries, investigators and educators, proves, if it proves anything, that the regular medical profession is not inimical to progress. It is therefore not likely, if homeopathy were in the line of progress, that it would meet with opposition from such an enlightened body of men as compose the regular medical school. And furthermore, it is to be said that not one of the propositions put forward by the homeopathic medical school has advanced out of the realm of theory into that of actually realized fact, and this after a trial of eighty-seven years in an age of scientific progress.

THE PUBLIC SERVICES.

Army Changes. Official List of Changes in the Stations and duties of officers serving in the Medical Department, U. S. Army, from August 14 to 20, 1897.

Col. Dallas Bache, Asst. Surgeon-General (Chief Surgeon, Hdqrs. Dept. of the Platte), leave of absence granted is extended one month.

Capt. Henry A. Shaw, Asst. Surgeon (Ft. Snelling, Minn.), is granted leave of absence for one month, with permission to apply for an extension of one month.

First Lieut. Charles Lynch, Asst. Surgeon (Ft. Robinson, Neb.), leave of absence granted is extended one month.

Capt. Henry S. T. Harris, Asst. Surgeon, is granted leave of absence for one month, to take effect upon his relief from duty at Ft. Preble, Maine.

Navy Changes. Changes in the Medical Corps of the U. S. Navy for the week ending August 21, 1897.

Asst. Surgeon F. L. Pleadwell, detached from the "Texas" August 17 and ordered to the "Nashville" August 19.

Asst. Surgeon W. M. Wheeler, detached from the "Oregon" August 23 and ordered to the Mare Island navy yard for duty in connection with the "Marietta."

Asst. Surgeon D. H. Morgan, detached from the "Monongahela" and ordered to the "Cincinnati."

Surgeon A. G. Cabell, detached from the "Monongahela," ordered home and be ready for sea.

CHANGE OF ADDRESS.

Armstrong, W. S., from 12 Vine St. to St. Charles and Montrose Boul., Chicago.
Dunn, Sherwood, from Los Angeles to Hotel Coronado, Coronado, Cal.
Davis, J. S., from Ocean Springs, Miss., to Charlottesville, Va.
Eastwood, A. Y., from Cleburne, Texas, to Marsdin, I. T.
Eichberg, J. H., from 18 E. 9th to N. E. cor. 7th and Race Sts., Cincinnati, Ohio.
Fitzpatrick, T. V., from 136 W. 8th St. to 32 Garfield Place, Cincinnati, Ohio.
Fisk, S. A., from St. Luke's Hospital to 37 18th Av., Denver, Colo.
Hall, R. B., Dr., from 154 W. 8th St. to Berkshire Bldg., Cincinnati, Ohio.
Hefflebower, R. C., from 628 Elm to N. E. cor. 7th and Elm Sts., Cincinnati, Ohio.
Owen, W. E., from Fox Lake, Wis., to Williamsburg, Iowa.
Pearce, C. T., from 20 W. 7th St. to N. E. cor. 7th and Race, Cincinnati, Ohio.
Reed, C. A. L., Dr., from 311 Elm St. to N. E. cor. 7th and Race, Cincinnati, Ohio.
Stewart, R. W., Dr., from 25 E. 8th St. to Ortiz Bldg, Cincinnati, Ohio.
Schultz E. T., from Reedsburg to Milwaukee Hospital, Milwaukee, Wis.
Semple, John M., from Medical Lake to Review Bldg., Spokane, Wash.
Shadle, J. E., Dr., from Endicott Bldg. to Lowry Arcade Bldg., St. Paul, Minn.
Taylor, H. S., Dr., from 590 Endicott Bldg. to Lowry Arcade Bldg., St. Paul, Minn.
Wiley, E. M., from Harrodsburg to Lexington, Ky.

LETTERS RECEIVED.

Adkinson, L. G., New Orleans, La.; Ammonol Chemical Co., The., New York, N. Y.
Bernd, Henry & Co., St. Louis, Mo.; Bradley, Theo. J., Albany, N. Y.; Bruyere, John (2), Trenton, N. J.; Boehringer, C. F. & Soehne, New York, N. Y.; Bicknell, George, Omaha, Neb.; Battle Creek Sanitarium, Battle Creek, Mich.
Castle, C. H. Cincinnati, Ohio; Cain, J. S., Nashville, Tenn.; Cutter, John A., New York, N. Y.; Clune, W. M., Germantown, Ill.
Dickson, D. K., Lead, S. D.; Darrow, E. & Co., Rochester, N. Y.; Davidson, E., Blackwater, Mo.
Eastman, T. B., Indianapolis, Ind.; Ewing, W. G., Nashville, Tenn.; Eshner, Augustus A., Philadelphia, Pa.
Flint, Austin, New York, N. Y.; Ferguson & Goodnow, Chicago; French, Pinckney (2), St. Louis, Mo.
Gillette, W. J., Toledo, Ohio; Gessner, H. B., New Orleans, La.; Gould, George M., Philadelphia, Pa.; Galbraith, F. B., Pontiac, Mich.; Giffin, L. M., Boulder, Colo.
Hodges, J. Allison, Richmond, Va.; Hogan, Geo. A., Birmingham, Ala.; Heaton, Conley, Aurora, Ind.; Hubbard, G. W., Nashville, Tenn.; Holland, J. W., Philadelphia, Pa.; Holsteen, W. F., Chicago; Hyndman, Jas. S., Cincinnati, Ohio; Hoover, Thos. C., Columbus, Ohio; Harrison, E. E., West Concord, Minn.; Hogue, J. H., Altoona, Pa.
Jackson, D., Pleasantville, Iowa; Jones, Charles H., Tempe, Ariz.; Jenkins, J. F., Tecumseh, Mich.
King, A. F. A., Burlington, Vt.; Knott, Van Buren, Sioux City, Iowa, Kennard, K. Sellers, Cynthiana, Ky.
Lutz, E. J., St. Louis, Mo.; Levy, Robt., Denver, Colo.; Lindsley, J. Berrien, Nashville, Tenn.; Lewis, T. N., Kissimmee, Fla.
Mills, Samuel C., Richmond, Ind.; McBride, M. A., Tahlequah, I. T.; Mongomery, Douglass W., San Francisco, Cal.; Merrick, M. B. (2), Passaic, N. J.; McIntosh Battery and Optical Co., Chicago.
Nelson, Chesman & Co., St. Louis, Mo.; Nieschang, Charles C. F., Fort Wayne, Ind.
Powell, S. D., New York, N. Y.; Parke, Davis & Co., Detroit, Mich.; Parker, F. L., Charleston, S. C.; Punton, John, Kansas City, Mo.; Potter, Samuel O. L., San Francisco, Cal; Peirce, C. N., Montreal, Can.; Patch, Wm., Sibley, Ill.; Patterson, J. C., Chapel Hill, N. C.
Rathmell, J. R., Chattanooga, Tenn.
Seidler, W. F., Newark, N. J.; Sajous, Chas. E. de M., Philadelphia, Pa.; Shadd, F. J., Washington, D. C.; Stemen, C. B., Fort Wayne, Ind.; Sharp, L. J., Harmony Grove, Ga.; Saunders, W. B., Philadelphia, Pa.; Sangree, Ernest B., Nashville, Tenn.; Starkey, Horace M., Chicago; Stewart, F. E., Detroit, Mich.; Scott, Clifton, Des Moines, Iowa; Souchon, Edmond, New Orleans, La.; Scheppegrell, W., New Orleans, La.
Taylor, P. Richard, Louisville, Ky.; Townsend, W. R. New York, N. Y.; Tracy, Edward A., Boston, Mass.; The Ammonol Chem. Co., New York.
Von Quast, E., Kansas City, Mo.
Welch, William H., Baltimore, Md.; Wilde, Julia Cabot, Chicago; Wood, T. H., Nashville, Tenn.; Winston, Geo. T., Austin, Texas; Withrow, J. M., Cincinnati, Ohio; Wandless, Henry W. (2), Dallas, Texas; Weir, C. F., Chicago.

PAMPHLETS RECEIVED.

Antiseptic Treatment and the Limitation of Climatic Treatment of Pulmonary Tuberculosis. By E. Fletcher Ingals, M.D. Twenty pages. Reprinted from the Journal of the American Medical Association.

Atrophic Rhinitis. By John Edwin Rhodes, M.D. Twenty pages. Reprinted from the Journal of the American Medical Association.

Bellevue Hospital Medical College, New York city. Announcement for 1897-98.

Central College of Physicians and Surgeons, Indianapolis. Announcement for 1897-98.

College of Physicians and Surgeons, New York city. Announcement for 1897-98.

College of Physicians and Surgeons of San Francisco. Announcement for 1897-98.

Fort Wayne College of Medicine. Announcement for 1897-98.

Hemiplegic State and Its Treatment, The. By Archibald Church, M.D. Eight pages. Reprinted from the Chicago Medical Recorder.

Medical College of Ohio, Cincinnati. Announcement for 1897-98.

Medical Education; Direct Autoscopy—Kirstein; Exaggerated Arytenoid Movement; Fatal Hemorrhage from the Nose and Pharynx from Unusual Cause. By Robert Levy, M.D. Paper. Reprints.

Starling Medical College, Columbus, Ohio. Announcement for 1897-98.

University College of Medicine, Richmond, Va. Announcement for 1897-98.

Women's Medical School, Northwestern University, Chicago. Circular of Information for 1897-98.